

COAL AGE

Blackwood Coal & Coke Co., Blackwood, Virginia

AGAIN 1925 Has Repeated the Success of "RandS" Installations



During the past year 65 percent of our contracts were *repeat* orders. Isn't that the soundest evidence of *satisfied customers* any organization can compile?

An impressive reason why this organization has gained and keeps the confidence of the coal industry is our uniform policy of improving and adopting new and better equipment—every "RandS" installation reflects this policy.

Let us tell you what this policy provides for your 1926 requirements.

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Pittsburgh Coal Co., Pittsburgh, Pa.	Marcus Tipple
Gulf Smokeless Coal Co., Covel, W. Va.	Air Cleaning Plant
West Canadian Collieries, Blairmore, Alberta	Air Cleaning Plant
Hillman Coal & Coke Co., Edna, Pa.	Marcus Tipple
E. E. White Coal Co., Stotesbury, W. Va.	Marcus Tipple
Upland Coal & Coke Co., Elkhorn, W. Va.	Marcus Tipple
Algoma Coal & Coke Co., Algoma, W. Va.	Marcus Tipple and Air Cleaning Plant
Pittsburgh Terminal Coal Co., Castle Shannon, Pa.	Local Trade Bins
Berwind White Coal Mining Co., Windber, Pa.	Air Cleaning Plant and Tipple

"RandS" Service embraces the design and construction of Tipples, Washeries, Air Coal Cleaning Plants and Re-Screening Plants. CONSULTATION WITHOUT OBLIGATION.

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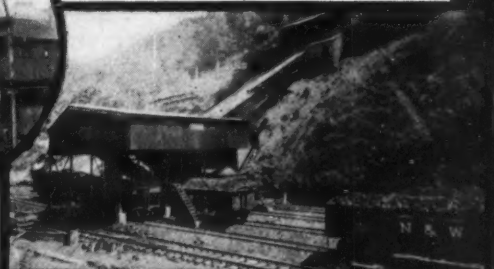
Peerless Coal and Coke Co.
Vivian, West Virginia



Hillman Coal & Coke Co.,
Edna, Pa.

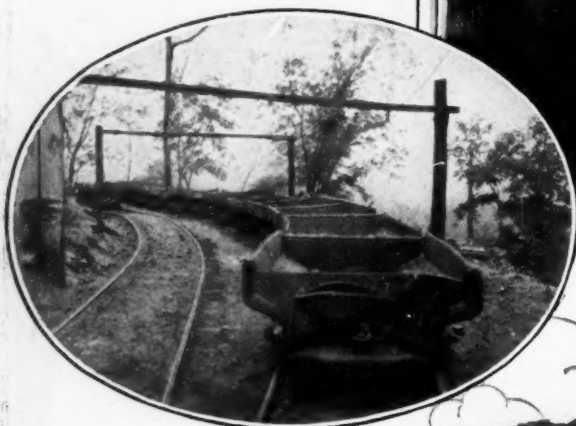


Fordson Coal Company
Twin Branch, W. Va.



Four locomotives equipped with Exide-Ironclad Batteries, in the charging barn of Consumers Mining Company, Harpersville, Pa. An Exide-Ironclad has a high efficiency on charge. It takes current in quickly, easily, and uses it sparingly.

Here are empties badly needed at the face. When miners have to wait for cars the fault may lie in the speed with which batteries drive your motors. Exide-Ironclads have pep enough to keep cars moving rapidly all day long.



Here's one place you don't want your storage batteries to visit—the repair shop. Where there are Exide-Ironclads this shop stays empty most of the time, for these batteries are rugged.

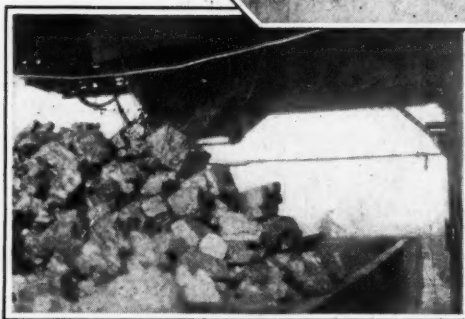
When the motorman comes to a steep hill he needs extra power. He gets it if he is driving an Exide-Ironclad-equipped motor. Here's one that is breezing up a 4% grade with a long trip of loaded cars—and it's the last trip of the day, too.

How to cut haulage costs

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They will drop just as they have in hundreds of coal mines that have equipped their battery motors with Exide-Ironclad Batteries. The great power of this battery, its boundless pep, the ease with which it charges, its ruggedness and long life, cannot fail to improve your haulage system.

You should know more about Exide Ironclad Batteries. A representative from our nearest branch will gladly call, or write today for a free copy of our Booklet No. 1791, "Facts for Consideration in *Selecting a Battery for Locomotive Service.*"



How many cars you ship each day depends largely upon the speed and efficiency of your haulage system, and that in turn falls back upon the work your battery motors do. More cars shipped—and loaded in quicker time—is the rule where Exide-Ironclads are used.

Exide

IRONCLAD BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

Exide Batteries of Canada, Limited, 153 Dufferin Street, Toronto

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COAL AGE

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McGraw-Hill Company, Inc.

Tenth Avenue at 36th Street, NEW YORK, N. Y.

WASHINGTON, Colorado Building
CHICAGO, 1 South Dearborn Street
PHILADELPHIA, Real Estate Trust Building
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Cable Address: "Machinist, N. Y."

The annual subscription rate is \$3 in the United States, Canada, Mexico, Alaska, Hawaii, the Philippines, Porto Rico, Canal Zone, Cuba, Honduras, Nicaragua, Dominican Republic, Salvador, Peru, Colombia, Bolivia, Ecuador, Argentina, Chile, Spain, Panama, Brazil, Uruguay, Costa Rica, Guatemala and Paraguay. Extra foreign postage \$3 (total \$6 or 25 shillings). Single copies, 20 cents.
Change of Address—When change of address is ordered the new and the old address must be given. Notice must be received at least ten days before the change takes place.

Publishers of
Coal Age Engineering and Mining Journal-Press
Engineering News-Record American Machinist
Power Chemical and Metallurgical Engineering
Ingénieur International Radio Retelling
Bus Transportation Electric Railway Journal
Electrical World Electrical Merchandising
Journal of Electricity
(Published in San Francisco)
Industrial Engineer
(Published in Chicago)
American Machinist—European Edition
(Published in London)

Copyright, 1926
By McGraw-Hill Company, Inc.
Published weekly
Entered as second-class matter
Oct. 14, 1911, at the Post
Office at New York, N. Y.,
under the Act of March 3,
1879.
Printed in U. S. A.
Member Audit Bureau of
Circulations
Member Associated Business
Papers, Inc.
Number of copies printed
this issue, 11,881

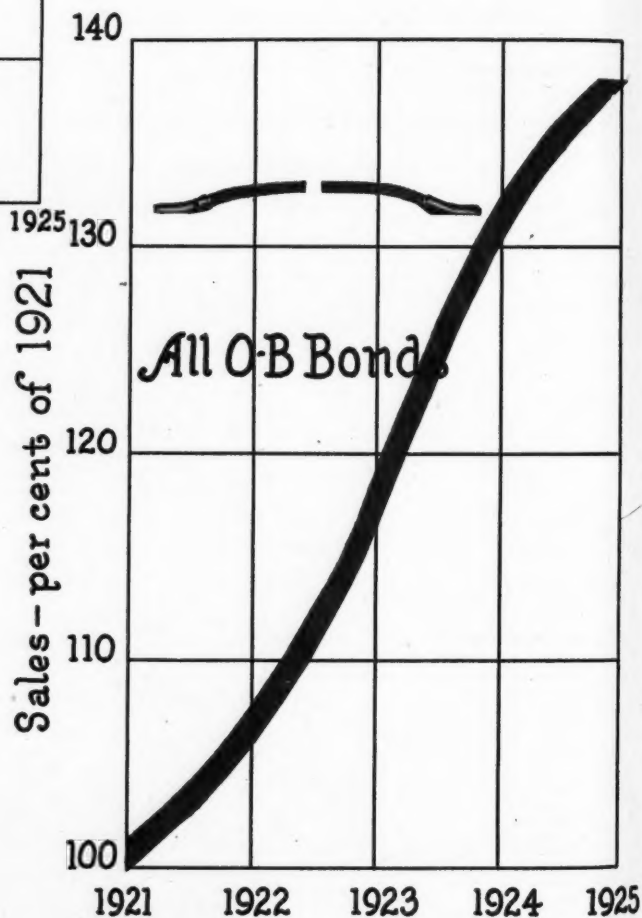
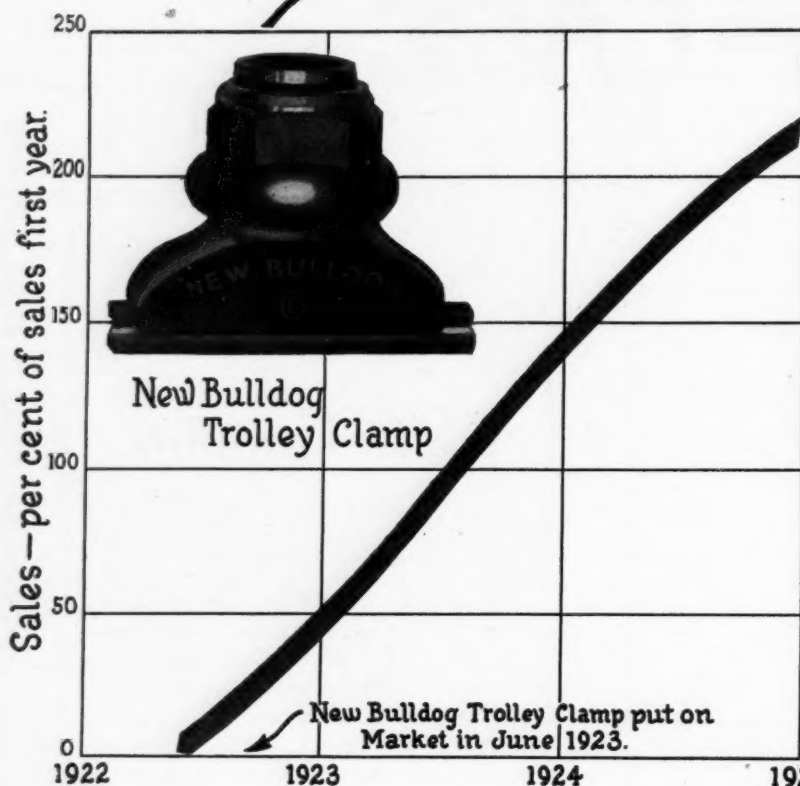
Swift Tonnage

FAST LOADING of coal underground by machines has taught the Sheridan-Wyoming Coal Co. several truths that are not always accepted by men with less experience in operating loaders. One of these explained in an article in next week's issue of *Coal Age* is that a mine may not reduce its number of pit cars when it goes on a loading machine basis. This Wyoming company had 475 cars at Acme in hand-loading days before last June and did not retire a single one. Instead it had to increase the capacity of them all.

GOODMAN SHOVELING MACHINES working in rooms have averaged 196 tons for a whole month in this mine and the latest type Joys in entries averaged 160 tons. These figures are high but so is the coal. Improved shooting methods and perfections in haulage, with 5-car partings in each room to keep empties always at hand are expected to raise the tonnages even higher.

SIBERIAN COAL MINING comes in for a further treatment in next week's issue by Alfred Pearson, Jr., whose initial article, describing general conditions in the Kuznets basin appeared in this magazine Nov. 26, 1925. Mr. Pearson, who ran a group of mines for the Soviet government, explains some interesting things about primitive Russian mining and remarks upon the opportunities for betterment such as the Russians are striving after in the new mining movement they are initiating with the advent of 1926.

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COAL AGE

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. Dawson Hall
Engineering Editor

Volume 29

NEW YORK, JANUARY 21, 1926

Number 3

A Year of Reconstruction and Business Activity Without Inflation Predicted for Bituminous Coal

DESPITE ALL THE disappointments of the year 1925, the industry enters 1926 not without renewed hope. The United States is just over the threshold of a period of prosperity which appears to be based on a most substantial footing. There is no panic purchasing. People are not buying for speculation nor are they placing a half-a-dozen orders in the expectation of cancelling five when one of the six is filled. So there is a safe and sane background for aggressive business. It seems likely to continue.

The bituminous coal industry is active. The whole coal tonnage for 1925, large as it is, does not give any adequate indication of the activity for 1926, because the output of the later months when business got its stride is immensely greater than in preceding months of the year. It is not safe to predict the market activity for 1926, but it should be a bigger year than that which preceded it. Stocks are not abnormally large, 48 millions on Nov. 1 of last year, enough for only 35 days at the present rate of consumption.

The only uncertain and abnormal feature in the record productions of bituminous coal now being made is that they, in part, result from the anthracite strike.

No rocks are ahead till 1927 and perhaps none then. No one is alarmed about the prospect of getting all the coal he wants. So there is no fever for fuel, only a steady healthy demand. Toward the end of the year production will be sustained, perhaps, from fear of a strike, but just now the industry has no such stimulus to business and yet the market is exceptionally brisk. In consequence, bituminous operators are hopeful of a large production and the only dampening influence is the low price of the product. The bigger and better mines will not fail to draw some dividends while the present condition lasts. In the summer a falling off is to be expected. That is every year's experience, barring a strike. By and large, 1926 will be a good year, though as far as prices are concerned not a booming one.

Large consolidations and the extensive entry of capital into the business as the result of bond issues (over \$150,000,000 since early in 1924) are sure to help to steady the market. Bankers do not advocate an excessive anxiety for business such as would cause production to be conducted at a loss. In consequence all the gains in the technique of the industry, all the mechan-

isms and applications in loading machinery, electrification, conveyors, low-temperature carbonization and preparation are bound to make further progress. The advance in 1925 under the terribly adverse conditions which the industry faced during the greater part of the year make this certain. The many articles on these subjects in this issue, all give verification and countenance to this assurance. This will be a year of reconstruction.

Fortunately the industry is mending its standing with the public. The closing years of 1925 showed the anthracite industry entering into the good graces of the man on the street, a position which the bituminous

industry gained, in the beginning of the year, as a result of its multiplied tribulations. One cannot but feel that the present anthracite strike must soon come to an end. The operators have taken a most reasonable stand and are supporting it by action that deserves and receives approbation. On the whole the anthracite operators merit and are receiving the

goodwill of the public. As for the miners, they are beginning slowly to see that in their strike they are not opposing the operators' interest so much as their own. How long will they be in realizing that they have asked of the union, the operators and the public more than conditions will permit? For their sakes and for the sake of everyone, their well wishers trust that soon a more reasonable attitude will prevail.

A gratifying increase in output was registered in 1925. In 1924 the United States production was 483,687,000 net tons. This year the tonnage is estimated by the Bureau of Mines as 523,072,000, an increase of 8 per cent over 1924. The anthracite mines produced 62,120,000 tons in 1925 as against 87,926,000 in 1924. This decline was due, of course, to the extended hard coal strike.

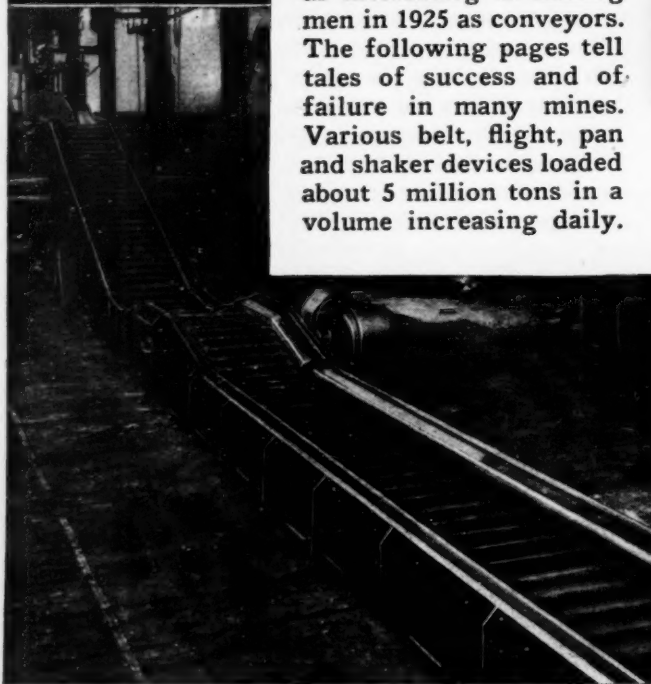
The cost of bituminous coal according to the *Coal Age* index averaged \$2.06 in 1925 and \$2.08 in 1924. The improvement in equipment and the cutting out of high-cost mines would account for more than these 2c. So it would look as if the year 1925 made a better record on the books than the previous year. A study of coal uses, however, is to be recommended. No industry can rest with comfort so long as it finds its capacity so grossly in excess of its market as does the coal industry.

Five Years of Bituminous Coal		
	Annual Output (Net Tons)	Av. Spot Price (<i>Coal Age</i> Reports)
1925	523,072,000	2.06
1924	483,687,000	2.08
1923	564,565,000	2.77
1922	422,268,000	3.67
1921	415,922,000	2.55
1920	568,667,000	5.64

Underground Conveyor Progress

NO Other Machines were as interesting to mining men in 1925 as conveyors. The following pages tell tales of success and of failure in many mines. Various belt, flight, pan and shaker devices loaded about 5 million tons in a volume increasing daily.

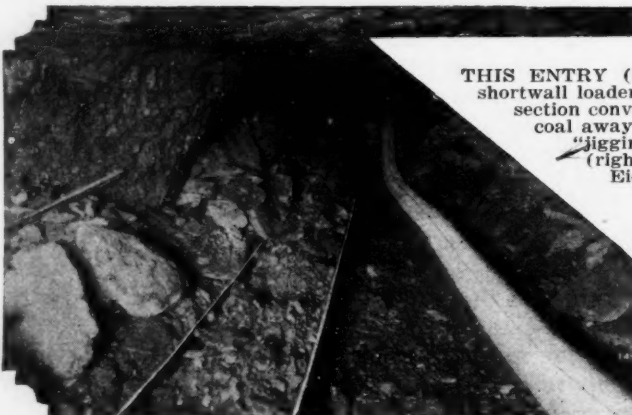
THIS ROOM CONVEYOR in low coal is used successfully in a room-and-pillar layout in the Knickerbocker mines near Johnstown, Pa. Coal is loaded onto self-contained face conveyors which discharge into this sectional conveyor leading to the haulway. The under strand moves on the floor and over rollers on about 6-ft. centers, making for light weight construction.



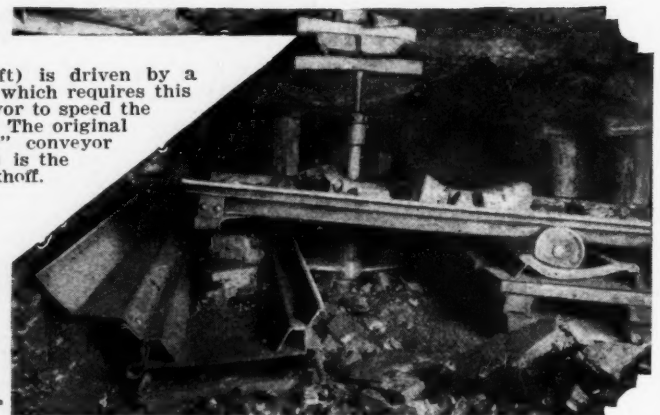
AN ARMORED CONVEYOR which, when placed close to a long undercut face, would stand up under a fall of coal, was desired by the Bertha-Consumers Co. This Fairmont face machine met the specifications.



IT IS a small trick for a man to load 30 to 40 tons of coal on a conveyor which is placed so close to the face as this one at Sweetwater, Wyo. It almost touches the props and cribs. The latter are always used though generally they do not take much weight.



THIS ENTRY (left) is driven by a shortwall loader, which requires this section conveyor to speed the coal away. The original "jigging" conveyor (right) is the Eickhoff.



Year Gives Great Impetus to Use of Conveyors Underground in Many Coal Fields

Probably 5,000,000 Tons Were Handled by Various Types of Belt, Pan, Flight and Shaker Machines—Pittsburgh Coal Co. Developed Y System with Them

By Alphonse F. Brosky

Assistant Editor, *Coal Age*,
Pittsburgh, Pa.

IN 1925 THE production of coal loaded by hand into conveyors nearly stepped up to the production loaded by machines into mine cars in our bituminous mines. Conveyors played a part in the mining of about 1 per cent of the country's production of soft coal last year or approximately 5 million tons. This is an estimate which seems to be well substantiated by the far-flung activity along this line. Conveyors are being built and used everywhere. Without doubt there are in existence now more types of conveyors than there are loading machines. Because they are simpler mechanically and, therefore, more easily built. Their application to the mining of coal is more rapid than that of loading machines because they are more flexibly handled. In 1926 the industry may see more coal mined by the use of conveyors than by the use of loaders.

In what has already been said it is not intended to infer that the conveyor eventually will supersede the loader, for each has its special capacity to meet different sets of conditions. Primarily, the loader saves labor and the conveyor saves time; together, each facilitates the use of the other. As individual units the two have not yet been successfully co-ordinated but that will, and must, come later.

Of the conveyors now in use, some are light for the sake of portability; others are heavy and rugged enough to withstand the fall of a cut of coal upon them when they are laid to touch the face. Some are self-contained and others are sectional; all are more or less portable, as they must be. Wood, steel and rubber are worked into the construction of mine conveyors of many types using belts, flights, aprons or shaking pans.

These at first were applied to long face layouts, the belief being current that the tonnage obtainable from a given area mined by rooms and pil-

lars was not sufficient to insure efficient conveyor operation. Concentrated and intensive working is proving the good judgment of those who are applying conveyors to room-and-pillar layouts where long faces can be maintained only with extreme difficulty.

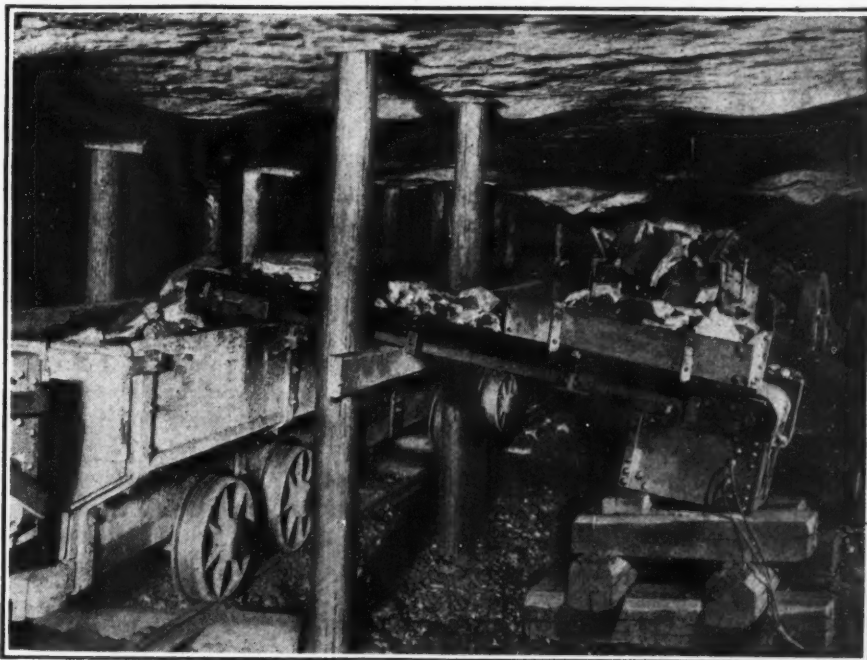
Light and portable, self-contained conveyor units, which can be thrown together at will, are doing fine work in the drawing of pillars from rooms and entries. In the brief period of a year the conveyor has sprung to a place of real importance. It now bids fair to transcend the lead which the loading machine heretofore has enjoyed.

Variations in the design of present-day conveyors are only partly due to the ingenuity of the makers. Mining men, understanding the requirements of the conveyors and the conditions under which they must work, have specified details of design and have dictated changes. This they

have done to a far greater degree than with mechanical loaders. Several distinct types of conveyors are required, for one variety will hardly meet any two conditions inasmuch as the design must depend upon the duty of the machine.

The H. C. Frick Coke Co. has pioneered in the use of a heavy face conveyor. It contends that for successful longwall operation the unsupported span of roof between the face and the timbers must be a minimum and, therefore, that the conveyor must be laid so as to touch or almost touch the face before the latter is shot down. So placed, it must be rugged enough to withstand the fall of a cut of coal. This arrangement is advantageous in that much of the coal is placed on the conveyor without shoveling.

This company seems to place its hopes for more efficient mining on true longwall layout. Spasmodically it has experimented with straight



Portable Transfer Conveyor

The short conveyor in the foreground transfers coal from a longer sectional conveyor which is parallel to the mine track. This arrangement provides a means of loading in a room a trip of a length equal to that of the parallel conveyor. The one here shown is a self-contained Jeffrey flight conveyor with a capacity of 60 to 75 tons per hour.

faces in its Leckrone mine with no startling results but is continuing active planning in this direction. Right now it is arranging a trial of retreating longwall, not necessarily from the boundary but from a starting point several thousand feet within solid coal.

In the Sweetwater mine of the Gunn Quealy Coal Co., in Wyoming, a Link-Belt sectional conveyor is working on a 250-ft. straight face. Three such faces, each using 500 ft. of conveyor, are in operation. The conveyors were first employed in a modified V-layout but the feeling that a greater tonnage from the same length of conveyor could be obtained by straight faces caused the shift to the latter. The coal averages 6½ ft. thick and lies on an average pitch of 5 deg. Over it lies a good sandy shale top. One of these faces during August of last year averaged 359 tons per day.

Props of 8-in. diameter are placed on 18-in. centers along the entire length of the face and are backed by a row of cribs on 15-ft. centers. The cribs are built of rejected railroad ties resting on about 6 in. of bugdust. They seldom take weight and serve their purpose only when an unusual condition causes the roof to ride over to the face when they protect the men and machinery. The roof caves every other cut. The coal which lies under 500 ft. of cover is shot directly onto the conveyor. Despite this fact, because this machine is heavily constructed, reasonable falls have not in the least damaged the conveyor. By this arrangement approximately 10 per cent of the coal is loaded out without shoveling. Recovery in the sections worked by long faces thus far has been 100 per cent.

LONG STRAIGHT FACE USED

Experience at this mine has shown that the long straight face is more flexible than the V-face and stands better during idle periods caused by a lull in the market. The company believes, however, that continuity of operation is a big factor contributing to successful long face operation.

In the Rachel shaft of the Bertha-Consumers Co. in West Virginia, heavy face conveyors are operated on a series of 100-ft. saw-tooth faces in the Pittsburgh seam. These are developed by rooms, 12 ft. wide on 80-ft. centers, turned at right angles to the butt entries. Mavor and Fairmont flight conveyors are placed along these faces which are at 50 deg. to the rooms. These conveyors



Conveyor Hastily Digs Out of This

This photograph of a Jeffrey sectional conveyor operating on a 300-ft. face was taken immediately after the coal was shot down. The coal is lumpy and has rolled out to and on the conveyor satisfactorily. At least one-third of this shot will be loaded out with scarcely any labor on the part of the face men. The coal is undercut on one shift and loaded in a following shift. Fifteen loaders, stationed at 20-ft. intervals, have loaded out as much as 480 tons per shift or 32 tons per man.

are elevated so as to discharge into mine cars in the rooms. The face and the room track not flanked by coal are protected by cribs placed on a bed of bugdust, as in the Sweetwater mine. The crib is built so that by the removal of a trigger timber, it collapses falling forward toward the face. The salvaged timbers are utilized for rebuilding cribs closer to the face. Six men in a single shift are expected to load one cut which yields 150 tons.

Inasmuch as the coal is shot directly onto the Fairmont conveyor in the Rachel mine, the machine must be rugged in design and the chain totally inclosed, which necessarily adds to the weight of the machine. The frame is made up of bolted-together sections, about 6 ft. long, which are somewhat flexible when the bolts are not drawn tightly. The conveyor is taken apart only when it is moved from place to place. It is shifted forward by jacks or by mining machine chain or by barring it over greased skids. The drive section may be placed at any intermediate point and is reversible so that the motor may be placed on either side of the conveyor.

An interesting longwall-conveyor operation is in the mine of the Paris Purity Coal Co. in the Paris basin of Arkansas. The bed being mined averages 24 in. thick, is free from partings, and pitches about 5 deg. The roof is of hard shale and the bottom of hard clay to a depth of about 5 in., below which is another layer of hard shale. The layout consists of faces 275 ft. long and on a

pitch of 3 deg. at right angles to the haulways serving them. These faces extend across the end of blocks 1,200 ft. long and are mined advancing. A conveyor is placed along the face and loads direct into mine cars in long trips on the haulway in which 4 ft. of bottom is lifted. The conveyor used was designed by Clarence Claghorn, consulting engineer, of Baltimore, Md., and was furnished by the United Iron Works, Kansas City, Mo. It meets the requirements specified by the coal company, which stipulated that the height be limited to 7 in. and that it carry the coal, not drag it. The traveling element consists of a double-strand chain, each strand of which is about 10 in. wide with a pitch of 5 in. The capacity of this conveyor is 60 tons per hour.

CONVEYOR BREAKS COAL

Lump only is loaded on this conveyor so that the coal does not rub to any extent on the bottom of the pan. Practically all the coal mined is lump due to the practice of allowing the weight of the cover to break the coal which, incidentally, is hard and lumps well. After being undercut (in the clay) the coal falls as one slab from one end of the wall to the other and must afterwards be broken into lumps by sledges and wedges. In the cover, which is 130 ft. thick, is some sandstone and sandy shale; yet breaks extend to the surface. This company has found that the roof must be supported rather rigidly near the face if the roof is to be broken and that breaks must be

made if the system is to succeed under these conditions.

Sand jacks, designed to withstand a pressure of 300 tons, are employed to support the roof. They consist of a heavy cast-iron cylinder fitted with a plunger which, in working position, rests on sand. A bleed valve is provided at the bottom of the cylinder. Though the sand is subjected to an enormous pressure it is easily drawn off. During the last year over 100 of these jacks have been put into use. Many of them have been in service for a full 12 months and have proved successful in breaking the roof along definite lines. Patent rights covering this jack have been applied for.

A 5-ft. undercut along this face yields 90 tons of coal which is loaded in a single shift by seven or eight men. On the night shift are two timber men, two cutters and one shoveler who gobs the clay cuttings. Due to the small capacity of the car in use three men are required on the entry—two trimmers and one conveyor operator. H. Denman, consulting engineer, and president of the Paris Purity Coal Co., contributes further some interesting experiences and comments on conveyors and mining in general:

"The Paris Purity Coal Co. installed its first conveyor, 250 ft. long, a little over two years ago. In 1925 we installed one more 250-ft. conveyor and one 300-ft. conveyor. All three are of the same general type. Since the Paris Purity Coal Co. installed its first conveyor twelve others have been installed in the Paris field by different operators. At this time all these conveyors appear to be operating successfully. Most of these machines have been installed within the last year and a number of them within the last three

or four months. They are all of the chain type furnished either by the United Iron Works on the design worked out by Mr. Claghorn, or by the Pittsburgh Boiler & Machine Co. of Pittsburg, Kan., on a somewhat similar design, though much lighter and cheaper. The conveyors are all working on faces ranging from 200 to 300 ft. in length. Sometimes a wall is started about 100 ft. long and gradually extended.

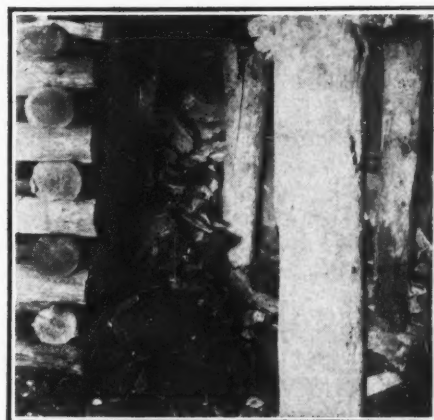
"Our first conveyor is now working for the third season, operating practically every day the mine runs and producing from 85 to 100 tons a day. The second conveyor, which is 300 ft. long, was installed about the middle of last summer. It puts out about 100 tons a day. The third was installed this winter. My partner, Mr. Johnson, believes that with a 200-ft. wall he will have fewer difficulties in handling the roof than with a longer wall. The last conveyor is being used in a layout which is virtually a 200-ft. room served by a roadway which is brushed on one rib.

"In the operation of these conveyors it is our aim and intention to load out one cut every day. In low coal especially, I believe conveyors are not a success unless one cycle of operation is completed every 24 hr. If on any day the men fail to load out the entire cut, so that the wall can be cut again that night, during that day and the one ensuing a loss of money is sure to be sustained.

MUST KEEP EVEN BOTTOM

"As we cut in a hard clay under the coal the machine runners at first made a step of some 6 to 10 in. along the entire length of the cut, which caused trouble in moving the conveyors. Later on, the machine runners learned how to keep an even bottom. We have found that certain types of mining machines can cut a more uniform and even bottom than others, an important point which must be kept in mind to insure ease in moving the conveyors.

"Out of nearly 30 mines operating in the Paris field I believe there is only one working on the room and pillar system, and at this mine the rooms are driven 100 ft. wide. In this field longwall holds sway and the mines have been worked in this way for six or seven years. The longwall system is what put Paris on the map. The conveyors here are not just being used on trial or as an experiment. They are being used every day to mine the coal. At our



Props and Cribs Behind a Long Face

This face is under 50 ft. of cover. Even so, the roof caves every other cut. The props have an average diameter of 8 in. and the cribs are constructed of rejected railroad ties resting on a bed of bugdust.

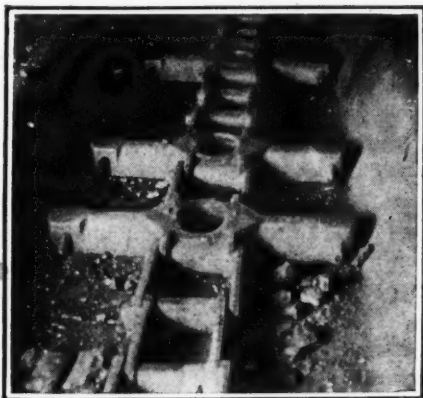
mine about three-fourths of the output comes from conveyors and if these cannot work the mine is shut down.

"Judging from a number of articles I have read, it seems that many of the conveyor systems in the country are being tried out only to see what they can do, and not as a regular system of producing coal. I note in a recent article that a company put in a system similar to ours, using scraper loaders, the use of which was discontinued after they had been proved successful. The conveyors in the Paris field are standard equipment on which we rely in making our living in the coal business.

"During the last year there has been considerable agitation on the part of the United Mine Workers to force some kind of a contract on the operation of these machines. The operators of the Paris field believed it impossible to inaugurate any kind of a contract scale for these conveyors that will meet the varied conditions encountered in operating them.

"It has been the experience everywhere in the past that when the miners make a scale no reduction in the cost of operation is possible. The scale for contract work is always based on the present method of mining and made high enough to absorb any advantages in the system by allowing the operator only a small differential which in most cases does not cover the power bill for the operation of the machinery, much less take care of interest, depreciation, repairs and the great risks of failure when new machinery and processes are tried out."

In the No. 5 mine of the Kemmerer Coal Co. at Sublet, Wyo., in a seam which pitches 20 deg., shak-



Close-Up of Link-Belt Conveyor

This conveyor is installed in the Sweet-water mine of the Gunn Quealy Coal Co. in Wyoming. The heavy chain and scraper flights have been comparatively free from break-downs. They stay on the bottom of the trough carrying with them all of the coal which is placed on the conveyor.

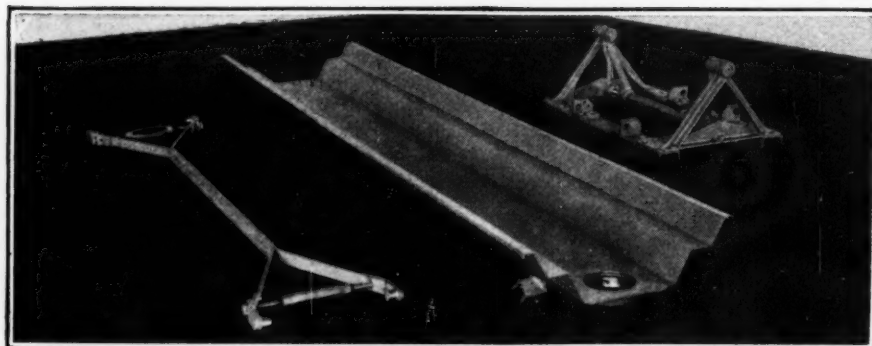
ing conveyors are operated on a 100-ft. face which is turned to give a 3-deg. inclination. The coal is about 5½ ft. thick and is topped by a weak roof which falls when not supported. The thickness of the cover is about 1,100 ft. of which at least 50 ft. is sandstone. The coal is not undercut. Ten face men and one man on the entry jointly produce about 125 tons in 8 hr., all mining duties accounted for. The direct result of this layout has been better coal, less powder consumption and higher recovery.

The face conveyor is placed 5 ft. from the coal in each advance. Five rows of props on 5-ft. centers each way are maintained behind the conveyor and two rows of props are set between the face and the conveyor before the latter is advanced. The face conveyor discharges into a second conveyor which is on the pitch. At the lower end of the pitch conveyor is a curved chute which causes the coal to discharge into the mine cars on the haulway in a direction parallel to the track.

The sections of this conveyor are suspended from chains hung from cross bars between posts. The forward stroke is imparted by a motor-driven engine and the return stroke by a helical spring.

In the low coal beds of central Pennsylvania the Pennsylvania Coal & Coke Corp. has driven rooms 25 to 35 ft. wide and drawn pillars by the use of portable and extensible belt conveyors, resulting in a substantial increase of efficiency of cutters and loaders. The most satisfactory results from conveyor loading in these mines have been obtained in the drawing of entry pillars. Light, 12-ft. and 20-ft. belt conveyors, made by the mechanics of the company, have proven most satisfactory in this work. The company believes it is too early to tell whether or not the wear and tear on these conveyors and the labor of shifting them will offset the economies effected in cutting, shooting, loading and hauling.

Great concentration and speedy recovery are obtained by the use of conveyors in a room-and-pillar layout in the mines of the Telford Coal Co. and the Jasahill Coal Mining Co. in central Pennsylvania. Here the Suppes sectional conveyor is used, supplemented by self-contained, portable belt conveyors. Rooms are driven 35 ft. wide and 250 ft. long, leaving 18-ft. pillars. Five men completely mine as many as three cuts from such a room in one shift



Ironton Conveyor Parts

Each trough section is composed of only three pieces which are joined together without bolts. For each trough section there is one hanger and one spacer which holds the latter in position with respect to adjacent hangers. The trough sections are fastened together by a flexible point, the respective mates of which are a part of the trough sections. Accurate alignment is unnecessary.

and as many as four from the pillar which is drawn immediately after the room reaches its limit. A saving of 25 per cent in the production cost is reported. This conveyor is used also in these mines to advance entries and for brushing the top or taking bottom.

Down in Alabama in the Aldrich mine of the Montevallo Coal Mining Co., in the Cahaba field, which works the Montevallo bed lying on a pitch of 12 to 15 deg., true longwall and conveyors have been in operation for a long time, the former since 1906. In this mine five 325-ft. faces are mined advancing by the use of shaking conveyors after at least one other type had been tried and scrapped. On each face are employed a total of 8 men on the night shift and 16 men on the day shift, of which 10 are loaders. These men take one 4-ft. cut a day in coal which is 50 in. thick including about 16 in. of rashings. The mine worked 310 days last year and during the last two years only five times has the company failed to make one cut a day on each of the five faces. Convict labor is used exclusively.

METHOD EMPLOYED

The layout, in plan at least, is somewhat like that employed by the Paris Purity Coal Co., of Arkansas, except that the walls are longer and the aircourse on the otherwise closed end of the wall is maintained in the goaf by a pack wall instead of by cribs. Bottom is taken in the haulway—which is kept open behind the advancing face by rock-filled cribs—so that the top of the mine cars is on a level with the bottom of the coal to facilitate direct loading from the shaking conveyors. The walls are turned to provide an inclination of not less than 1½ per cent in favor of the conveyor load. The average grade is equivalent to an 8-deg. pitch.

The face is kept open by props on 4-ft. centers which are not recovered. Two rows of timbers are maintained behind the conveyor and two are established in front of it before it is advanced to a new position. Bug-dust, rashings and slate are thrown behind these timbers and generally are of sufficient quantity to fill to the roof. Where the quantity is inadequate soft cribs are built over the refuse. The roof, consequently, is allowed to subside gently and does not cave violently as it does in many of the mines where long faces are being tried these days. Definite roof breaks occur every 200 to 600 ft. except where slips in the sandstone of the cover are encountered when much cribbing and timbering is required at great expense. The cover varies from 435 to 800 ft. in thickness.

The conveyor being used is a modification of the Mavor & Coulson shaker. Pan sections, provided with rollers which ride on a cradle, are 9 ft. long. Actuation is through the medium of a rope from the walking beam of a 27-hp. motor-driven shaking engine to a bell crank supported by an anchoring roof jack at the drive section of the conveyor. A ropeway is maintained in the goaf by cribs which obviate the necessity of moving the engine after every cut.

Because it believes as a result of its experience that the maximum efficiency in mechanical loading cannot be obtained by loading directly from the working face into the mine car, and because the seam which it is working is so badly cut up by erosion as to militate against a systematic layout of long faces, the Portsmouth By-Product Coke Co. is turning its attention to the application of conveyors in wide rooms in a room-and-pillar layout. It has already experimented with the layout using mine cars in place of conveyors and is con-

vinced that its roof conditions will lend themselves readily to such a layout, in which conveyors can be efficiently applied.

The plan provides for 40-ft. rooms on 80-ft. centers, driven about 325 ft. long, two of which would be mined simultaneously by face and room conveyors, the last of which would discharge into a common conveyor on the entry, to provide a single mine-car loading point for the two places. Of course crosscuts would be driven and pillars drawn by the use of the conveyor in somewhat the same fashion as that fol-

lowed by the Knickerbocker Mines in central Pennsylvania. Thomas Devenny, superintendent of its Freeburn mines, believes the tendency is unmistakably in the direction of machines which will cut and load—a necessary adjunct of which will be conveyors.

At Dawson, N. M., the Phelps Dodge Corp. is using 20-ft. belt conveyors of the Jeffrey type in pillar work and in a narrow-V layout. Two of these conveyors are laid in tandem along the V-faces of blocks 45-ft. wide (developed by single entries) and discharge at the throat of the V into mine cars on a haulway which is maintained partly in the goaf. The haulage arrangement in the working places is like that being followed by the Bertha-Consumers Co. in its Rachel mine. These V-faces in a panel have retreated well over 100 ft. without a pronounced cave, upon which the success of the

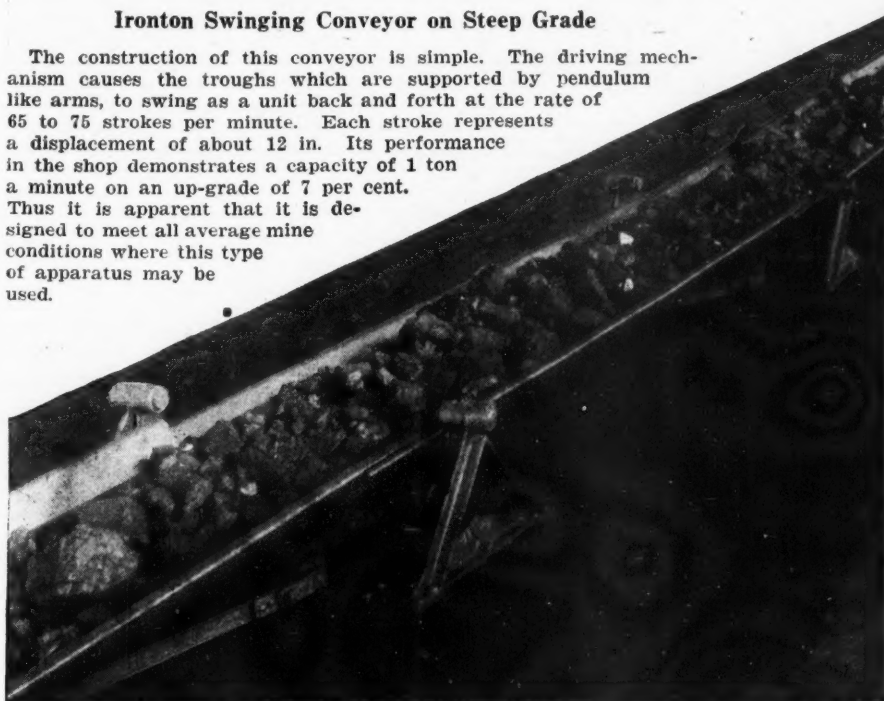
system depends; so this company is not ready to commit itself on the results of this work. In certain sections of its mines it is effecting a saving by the use of short conveyors, especially on pillars from 40 to 50 ft. wide, by eliminating brushing and the laying of additional track.

By what R. Y. Williams, who is in charge of the work, is disposed to call the Y-system, the Pittsburgh Coal Co. in its new Warden model mine near Pittsburgh, Pa., has laid the ground work for mining the Pittsburgh seam—69 in. thick and with its typical drawslate—by long

mally about 18 in. per minute. At this rate it would cut two faces or about 564 ft. in 6 hr., leaving 2 hr. or 25 per cent of the shift as leeway for delays. Incidentally, the plant equipment throughout is designed to handle its output in 6 hr. Since this mine is designed to produce 4,800 tons a day and since each Y will yield about 800 tons per shift, the

Iron-ton Swinging Conveyor on Steep Grade

The construction of this conveyor is simple. The driving mechanism causes the troughs which are supported by pendulum like arms, to swing as a unit back and forth at the rate of 65 to 75 strokes per minute. Each stroke represents a displacement of about 12 in. Its performance in the shop demonstrates a capacity of 1 ton a minute on an up-grade of 7 per cent. Thus it is apparent that it is designed to meet all average mine conditions where this type of apparatus may be used.



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faces and the use of conveyors and also loading machines when these can be applied to the system.

The plan is that of a double chain of 200-ft. blocks developed by triple entries and divided by single entries. Each of these will be mined by faces which converge to a common point on the one longitudinal single entry between each chain. The faces will be inclined at 90 deg. to each other and each will subtend an angle of 45 deg. to the longitudinal single entry, with which they form a Y. Conveyors will be laid along the faces and in the stem entry of the Y, discharging into cars of 4-ton capacity (hand-filled) on cross haulways.

Each face or wing of the Y is about 282 ft. long, this length being fixed to conform in shift tonnage to the single shift capacity of the equipment installed. Thus an undercutting machine is calculated to cut nor-

operation of six Y's will be required normally.

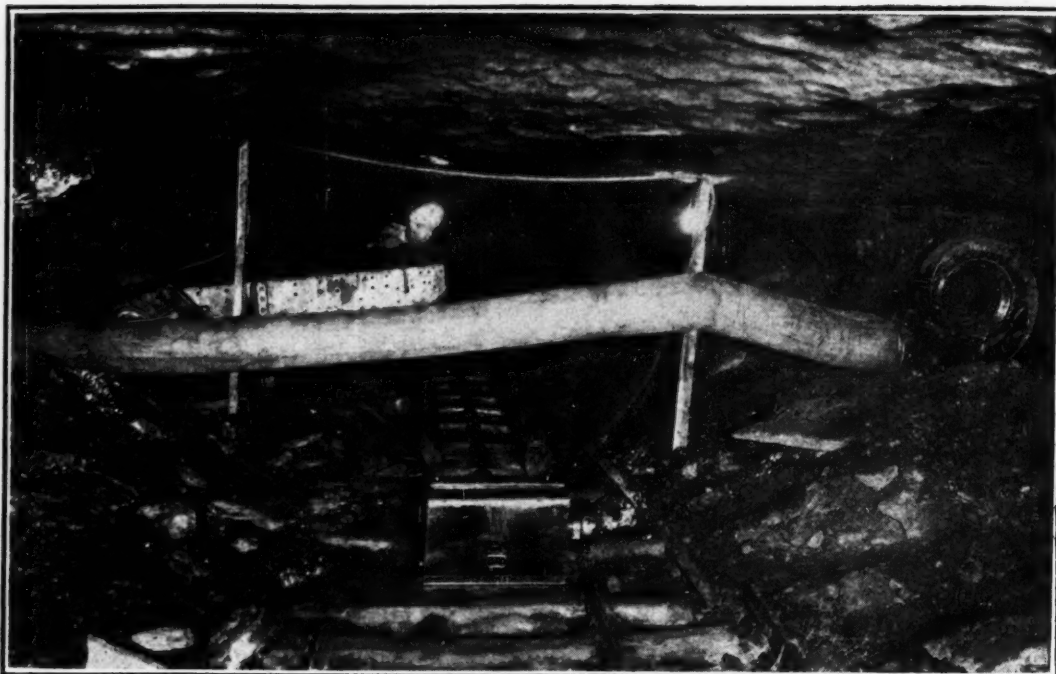
Between these Y's will be left 400-ft. barriers. At the start, the six Y's will be mined advancing, to the boundary where feasible, and the intervening barriers will be recovered retreating. Of the daily tonnage produced from each Y-face advancing 18 per cent will come from development work and in retreating 6 per cent. Adequate ventilation at all times is assured by the use of triple entries bounding the Y's. The advancing work will destroy one entry flanking each tip of the Y wings, leaving two entries on each side for complete-circuit ventilation in the retreat. In either case the goaf will be on the return end of the circuit.

Already this company has initiated the plan by the development of a single wing of one Y. The work was started in a small way so that the details might be worked out and co-ordinated, and because the coal-handling equipment was in the course of construction at the time. Incidentally, it has only recently been completed. This single face had been extended to a length of 220 ft. and advanced 140 ft. from the point of start, perpendicularly to the face, when about two months ago all the mine cars had been filled. The tippie now having been completed the face will be started again.

A major break occurred when the face had moved 110 ft. from the starting point, after which the face was advanced four cuts before it was

Side Line Type

The tributary conveyor is serving a shortwall loader. That at least two such loaders and two tributary conveyors are in operation is evidenced by the fact that a main conveyor is being used. The location of the blower at a distance from the mouth of the working place which it is ventilating prevents a closed air circuit.



stopped. This and a normal condition at the face after two months of idleness indicates the effectiveness of the roof control system which has been tried out.

The face is held by a line of mechanical jacks, set on 3-ft. centers 6 ft. from the face, each provided with a screw for adjustment and a removable head. A 10x30-in. boiler plate, $\frac{1}{2}$ or $\frac{3}{4}$ in. thick, is placed over each jack to keep it from pushing through the roof. The drawslate, which is 10 in. thick, is held by steel beams 14 ft. long running perpendicularly to the face. One end of each beam is inserted in a hole cut to a depth of 1 ft. in solid coal while the other end rests in a depression in the head of the jack.

DRILLS 6-IN HOLE 7 FT. IN 30 SEC.

A drill has been built in the shops of the company which in 30 sec. will put in a 6-in. hole to a depth of 7 ft., penetrating a 6-ft. cut and extending 1 ft. into solid coal beyond the limit of the kerf. The beams are inserted in these holes before a cut of coal is shot down. The face plan, therefore, involves a span of heavily supported roof, measuring 6 ft. and 12 ft. from the line of jacks and posts to the undercut face and to the solid coal respectively. Jeffrey sectional conveyors with hand loading are used on the face and in the stem entry leading to the cross haulway. The results thus far indicate the ability of a man to load out 25 tons of coal in 6 hr.

In the C mine of the Union Pacific Coal Co., at Superior, Wyo., an Eickhoff jiggling conveyor is now

functioning as a take-off for coal gathered by a scraper. Later it will be laid for hand loading along a 275-ft. face which will be extended to 450 ft., worked across the pitch. The Eickhoff conveyor is comparatively new in this country, though it has been used extensively in Europe for many years.

INSTALLATION AT TOMS CREEK, VA.

In a mine of the Virginia Iron, Coal & Coke Co., at Toms Creek, Va., Eickhoff conveyors are working on a 70-ft. face in a layout of 10-ft. rooms on 80-ft. centers. The pillar face is mined retreating from the inby end of the room. Coal is loaded by hand into a face conveyor, which is driven by a chain from a swiveling sprocket attached to the main delivery conveyor in the room. Full details of this installation will appear in an early issue of this magazine.

The Ironton Engine Co., of Ironton, Ohio, completed in the last month the development of a swinging or pendulum conveyor. This machine is simply a chain of interconnected 9-ft. troughs, which are supported by swinging arms pinned from hangers and driven as a unit by a heavy bell crank from a simple crank on a motor-driven engine at the rate of 65 to 75 strokes per minute.

The driving mechanism produces a rapidly accelerated stroke in one direction and a slow stroke in the other. The individual troughs are moved positively as a single unit about 8 in. to the front of the hanger centers and fall back through the

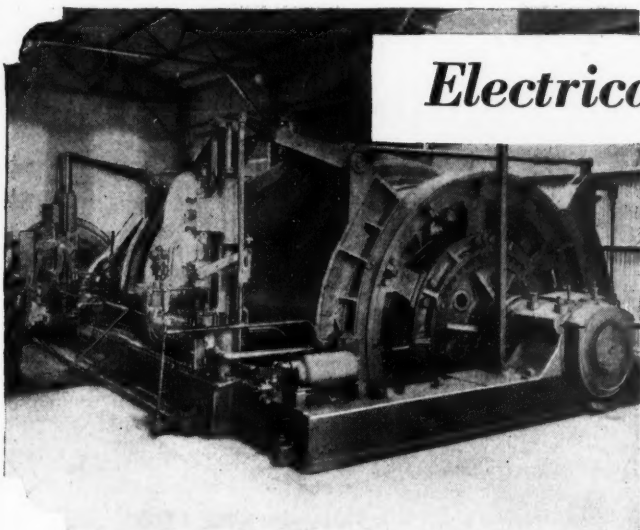
remainder of the swing to the rear. Thus is imparted a slow forward and upward stroke in the direction in which it is intended the coal shall move and a quick downward return stroke in the reverse direction. The movement is similar to that which a man uses in slinging coal from a shovel. The swinging design obviates any buckling of the trough sections where the conveyor is erected on an uneven mine floor.

No bolts are used in connecting the units. The hangers are held in correct position by spacers between them. As the joints between adjoining sections are flexible accurate alignment is unnecessary. Two men can easily handle any of the three parts of the extensible portion of the conveyor. A portable scraper conveyor is provided in conjunction with this conveyor. This elevates the coal from the swinging conveyor to the height of a mine car. The height of the discharge end of this conveyor is adjustable.

CHIEF PROBLEMS OF MINING

The introduction of conveyors of itself will not guarantee any advantages over the older method of loading directly into mine cars. The success or failure of any conveyor installation will depend more upon the attention devoted to related problems of layout, supervision and management in general. The ironing out of wrinkles will be accomplished quickly or slowly, as the degree to which the several phases are correlated. The problems encountered are chiefly those of mining and coordinating it with equipment.

Electrical Review

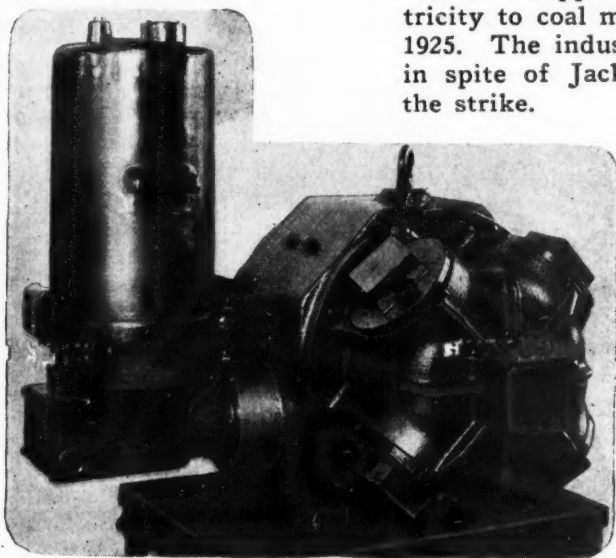


THIS 900-HP. electric hoist is in the new breaker of the Colonial Collieries Co., near Natalie, Pa.

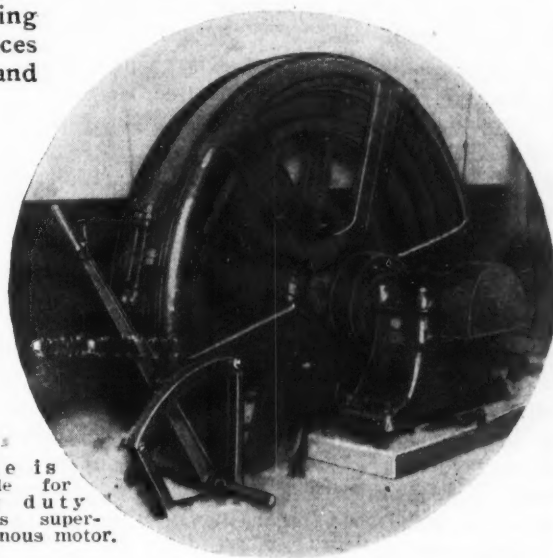


A MAGNETIC CLUTCH is built into the frame of this synchronous motor. Thus the unit is compact and easily controlled.

THE SUCCEEDING PAGES tell a story of progress in the application of electricity to coal mining during 1925. The industry advances in spite of Jacksonville and the strike.

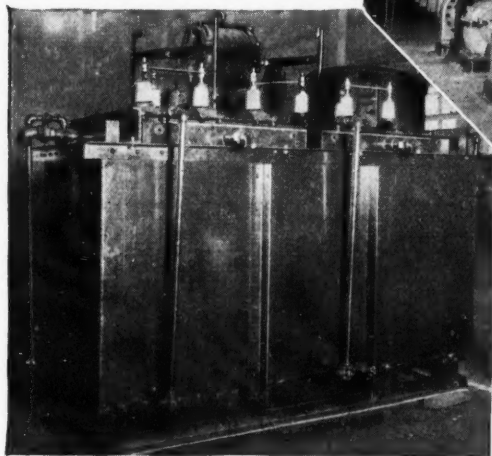


THIS INCLOSED motor and controller for gassy workings is the first complete outfit of its kind approved by the U. S. Bureau of Mines.

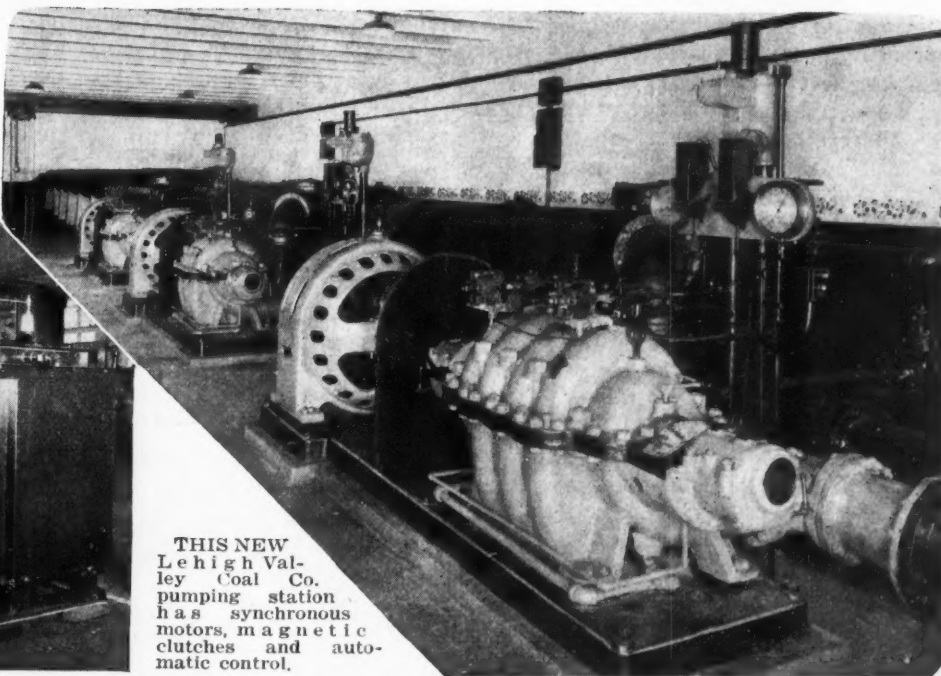


HIGH torque is available for starting duty in this super-synchronous motor.

IMPROVED liquid slip regulators like this now control the energy supplied by the flywheel of a motor-generator set.



THIS NEW Lehigh Valley Coal Co. pumping station has synchronous motors, magnetic clutches and automatic control.



Size of Electric Power Load Has Become A Criterion of Profits

Modernized Plants Are Setting New Ideals of Design,
Operation and Success—Investments in Electrical
Machinery Show Handsome Returns—Future Is Bright

By Edgar J. Gealy

Associate Editor, *Coal Age*
New York City

THE UNUSUAL profit-producing advantages proved by electrically-driven mining equipment, last year, have left no room for doubt regarding the better efficiency, greater reliability and larger success of motorized apparatus. With the aid of up-to-date tipples, breakers, haulage and pumping systems many mining companies even though operating under most adverse labor, economic and production handicaps have come back with renewed life.

Today, in both the bituminous and anthracite fields, other conditions being nearly equal, successful and unfortunate companies can be divided respectively into two groups—those which are highly electrified and those which continue to work with obsolete equipment by direct use of steam generated at isolated boiler plants.

Most conclusive proof of these facts is found in territories paying high wage scales which still find it possible to mine coal at a profit. Such a territory is that in southern Illinois where one can also see some of the most elaborate large-scale electrifications in the coal fields.

Operating cost data, lately collected by several anthracite engineers, have revealed the large economies of electrical equipment and the wastes of steam-driven machinery,

especially, when supplied through long steam lines. Consequently, there are under way many forces tending toward larger and more efficient electrically operated breakers and the rapid abandonment of steam-driven engines. All through the coal fields marked success has been attained by electrical apparatus.

A few weeks ago the Westinghouse and Nordberg two-motor 4,000-hp. electric hoist at the Orient No. 2 mine of the Chicago, Wilmington & Franklin Coal Co., at West Frankfort, Ill., broke the world's daily output record by hoisting 12,823 tons during one shift.

The Glen Alden Coal Co., of Scranton, Pa., lately installed a 15,000-kva. turbo-generator, built by the Allis-Chalmers Manufacturing Co. At the same time an addition was built to the Nanticoke power plant large enough to house fourteen new Stirling type boilers of sufficient size to handle about 45,000 kva. more generating capacity.

CONFIDENCE IN ELECTRICITY

In Illinois the Old Ben Coal Corp. practically completed its work of changing its mines from steam to electric drive and effected unusual power savings.

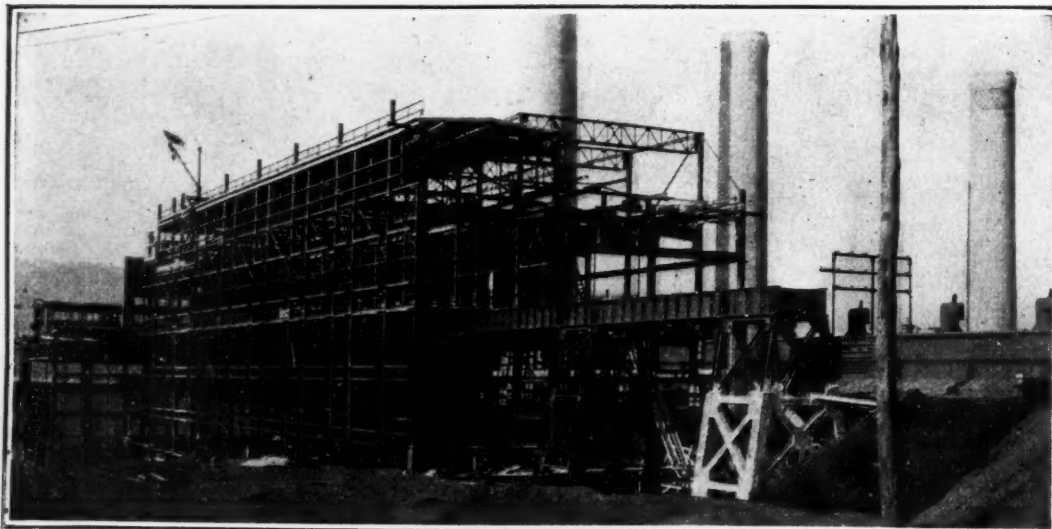
At Colstrip, Mont., the first all-

electric open-pit mine was made possible by the use of two 60-ton General Electric storage battery locomotives equipped with Exide-Ironclad cells rated at 1,800 amp.-hr.

Within a radius of a few miles, in the lower anthracite region, three new electrically operated breakers destined to set new standards of construction, operation and success are being completed.

The largest of these is the 10,000-ton breaker of the Lehigh Coal & Navigation Co., at Lansford, Pa. Standing near the site of the old wooden breaker, which formerly prepared the coal at this place, all the surrounding buildings are dwarfed by the new structure of steel and concrete which towers more than 200 ft. above the ground level. Mine cars are transported to and from the breaker on four inclined trestles. Near St. Clair, the Reppier Coal Co. is finishing a modern electrified steel breaker known as Newcastle Colliery. Here there is a connected motor load of 4,500 hp.

Between Mount Carmel and Shamokin the Colonial Collieries Co. has erected an electrically operated breaker completely covered with asbestos siding. This building is unique in many other respects. Flotation coal cleaners, manganese-

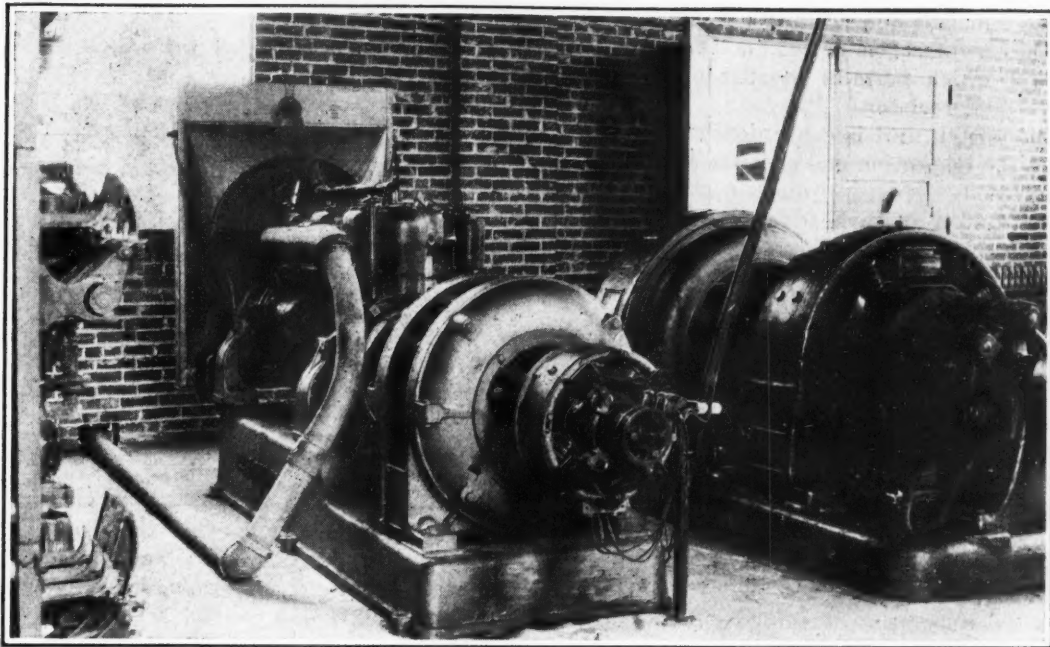


Mine Power Plant Made Larger

Fourteen new boilers can be placed in this addition to the Nanticoke power plant of the Glen Alden Coal Co. This company now has 50,000 kva. in electric generating capacity. Last year the company finished its electrification of all its mine pumps and now the work of complete modernization revolves around fan and hoist drives. Many shaft hoists requiring large-size motors may next be electrified.

Auxiliary Drive

View in the substation at the North Diamond mine, Earlington, Ky. This shaft mine, one of the St. Bernard group of the West Kentucky Coal Co., is the most modern in that section. The 50-kw. 2,300-volt gasoline-electric generating set is the auxiliary for driving the 50-hp. wound-rotor, variable-speed motor of the ventilating fan. This set was the second of its type to be installed at a coal mine. The first was at the Dehue (W. Va.) mine of the Youngstown Sheet & Tube Co.



steel centrifugal pumps, magnetic clutches, belt conveyors, car dumping equipment, hoists, belt-type loading booms and recovery plants co-ordinated in novel ways and used for new purposes are a few of the items of interest in this most modern coal preparing plant.

Nothing has done more to hasten the formulation of new programs involving the rapid installation of electrical equipment than the collection of comparative operating costs showing the advantages of electric power over steam. One large company has found that in most instances the quantity of steam required for power applications to mining equipment is three times that necessary to generate electricity to perform the same duty. This was at mines which had already electrified its most inefficient machines. Some steam-driven apparatus was found to use as much steam during the 16 hr. of idle time as in the 8 hr. when running. The reason for these conditions was the fact that steam lines must always be kept hot and leaks are almost unpreventable. Also, it is common practice to leave throttles and valves open to keep the lines free of condensate.

COSTS REDUCED

At a small independent mine in the lower anthracite region, previously well equipped with both electric and steam drives, the change to complete electrification reduced its power costs alone from 70c. to 45c. per ton. Another anthracite company found that when steam and electric energy were used at one of its mines its average power was be-

tween 65c. to 70c. per ton. Now, when completely electrified the average cost is about 35c. A saving of 25c. or 35c. a ton may seem small but when applied to an annual output of 8,000,000 tons it amounts to \$2,000,000 or \$2,800,000.

More than \$140,000,000 has been placed recently in the coal industry by means of new bond and stock issues. This money is being spent upon modernization plans. That satisfactory results are attainable is a sure fact, because even companies which have always enjoyed the reputation of being most progressive are realizing worth-while returns upon their investments in more electrical equipment. Such assurances of success will surely exert a strong urge upon many companies which have much greater opportunities to effect savings. A few examples show the results obtained by these new investments.

PROOF OF EXAMPLES

One breaker recently completed is designed to save \$1,000 a day. Another similar type structure costing about \$700,000 will make a saving of \$10,000 a month. More than \$100,000 a year will be saved by another company which recently spent \$142,000 for a few electrified hoists and pumps which were installed at only one of many mines it owns.

Many new and improved appliances particularly designed for mine service were developed during the last year.

The major improvements in the design of electric locomotive equipment were with a view toward obtaining better balance, greater pull-

ing effort, lower maintenance costs and greater safety. Early in the year the Jeffrey Manufacturing Co. and the Goodman Manufacturing Co. each had a locomotive approved as permissible, thus increasing the latitude of choice of the coal operator.

The dynamic braking controller has been strengthening its position in the coal industry. Another advance has been in the use of battery locomotives for main-line haulage. Realizing the advantages of electric haulage over all other types mine operators in places have introduced battery equipment where the use of the trolley would be neither desirable nor safe.

INTRODUCES NEW LOCOMOTIVE

A new storage-battery locomotive has been introduced by the Vulcan Iron Works. It is equipped with equalizing levers, a worm-gear drive, self-locking brakes and a cast-steel bar frame. This company has also placed on the market a bar-steel trolley locomotive with three-point suspension.

The Westinghouse & Manufacturing Co. has recently had approved by the U. S. Bureau of Mines a Baldwin-Westinghouse storage-battery locomotive for use in gaseous mines. This locomotive is of the company's standard bar-steel construction, equipped with two motors, single reduction geared drive and having a rated drawbar pull of 2,000 lb. at 3.5 m.p.h. All wiring is inclosed in metal conduit, flexible type is used where required by movement of apparatus. The locomotive is designed and approved to use either the lead-acid or the nickel-alkali storage bat-

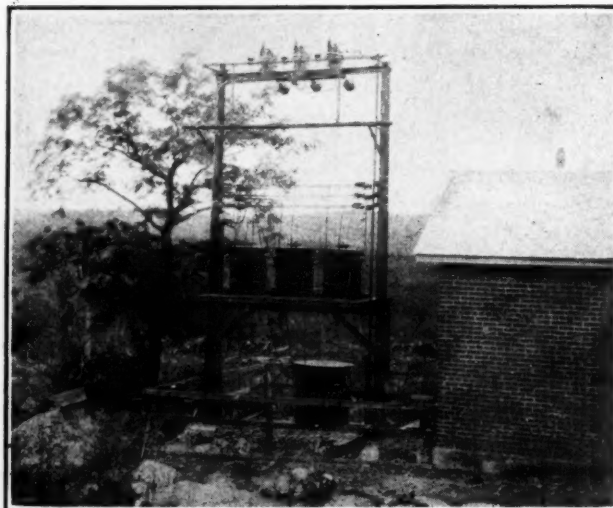
tery. Efficient operation is obtained by the use of series-parallel and field control which permits the use of a very small resistor.

The switch unit is conveniently located for inspection and consists of a double-pole fused disconnecting switch and a fused headlight switch combined in a single case. These switches are interlocked with a sliding door which permits safe and easy renewal of fuses.

There has been a large increase in the number of electric shovels used for open-pit mining. Today it is claimed that 40 per cent of such shovels are electrically operated. Practically all sizes of shovels have been successfully electrified, some being equipped with 90-ft. booms and 10-yd. dippers. One of the largest used in an open pit mine is that owned by the Sunlight Coal Co. of Boonville, Ind. It is a Marion model 350 supplied with the General Electric Co.'s Ward-Leonard voltage control apparatus.

An improved form of liquid slip regulator for use with wound-rotor motors on flywheel motor-generator sets for mine hoists has been developed by the Westinghouse Co. The method of operation is the same as for the older designs in which a torque motor receiving current from a series transformer in the primary circuit of the motor causes the electrodes to separate on overload, thereby increasing the slip of the motor and allowing the flywheel to take the load.

In the past there has been difficulty in bringing the main motor connections to the electrodes within the electrode cells. This arrangement has recently been improved. Former



Substation on Top

This particular substation is automatic feeding current to a slope through a borehole. Outdoor transformers are here used thus minimizing building expense. Stations of a similar nature requiring little or no attendance are often installed underground, in many instances separated from the balance of the workings by fireproof doors or partitions.

designs employing wood pot cells gave more or less trouble due to leakage of electrolyte. The newly designed stationary electrodes are supported by insulated bars from the top of the tank on a framework.

The cooling system consists of a number of deep narrow troughs open at the top, suspended around the inner side of the tank. This construction has a decided advantage over the pipe coils, where the cooling water contains a considerable quantity of suspended matter which would quickly clog up a pipe coil. The troughs being open at the top can be cleaned readily either by flushing out with water or by removing the trough and dumping.

The first electro-pneumatic hoist control outfit, designed by Westinghouse, was installed at Lansford by the Lehigh Coal & Navigation Co. A similar unit recently was sold to the Consolidation Coal Co.

A safety electric room hoist driven by a 5-hp., 250- or 500-volt direct-

current motor designed by the South Fork Foundry & Machine Co., was approved by the U. S. Bureau of Mines.

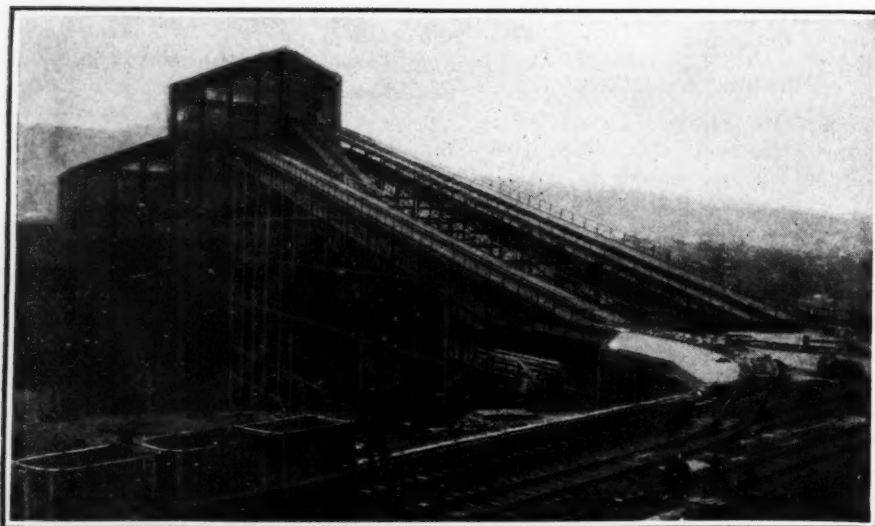
The anthracite strike gave much impetus to the installation of electric equipment. Just before the workmen were called out the operators did not know how many or what maintenance men would be allowed to work. Realizing that lack of fuel for steam plants and scarcity of labor for attendance would bring about serious consequences, there was the grand rush for pumps, motors and control equipment for several weeks preceding the strike. However, there were already several other economic forces exerting their effects upon pumping problems.

A new line of high-speed synchronous motors was developed by the General Electric Co. for the operation of centrifugal pumps. The size of these motors, for a given horsepower output, was reduced greatly as compared with previous designs.

SAFETY TO THE FRONT

The first complete motor and controller for use in a gaseous mine was brought out by the General Electric Co. and approved by the U. S. Bureau of Mines. The motor is a direct-current unit rated 5 hp., 900 r.p.m., 550 volts. Other motors and controllers of this type are now being designed.

More and more automatically primed, started, protected and controlled centrifugal pumps were installed. Also, many breakers were changed to wet-process preparation methods and several new types of pumps have been needed; consequently, many lead-lined, manganese-steel, rubber and bronze units were used.



Cars and Coal Are Lifted to the Breaker on Trestles

Four long sloping trestles over which loaded and empty mine cars are transported will be kept busy feeding this 10,000-ton breaker at Lansford, Pa.

There has been a marked tendency toward simplification and improvement of automatic pump control apparatus. A new priming valve actuated by a spring instead of a solenoid was developed by the Barrett, Haentjens Co. The notching relay has been supplanted by definite time relays and thermal relays which lock out the starting device after several trials to start have been made, if something is wrong with the pumps or its appurtenances.

The first application of super-synchronous motors to mine fans was made, during the year, by the Glen Alden Coal Co. Five General Electric motors of this type having a total horsepower of 1,500 were put

reached full synchronous speed it is slowly brought to standstill by the application of a hand brake. By this means the full-speed torque of the motor is available to start the fan. One of the largest fans to which this type of motor was applied was quite heavy as is indicated by the fact that its WR^2 was 1,440,000.

Another notable fan drive installation was one made by the Price, Pan-coast Coal Co. at its mine in Throop, Pa. To assure continuous operation of its ventilating system a 225-hp. Stirling internal combustion engine is provided.

Automatic substation equipments were sold in greater volume than in any preceding year. Most of the out-

localized overloads and prevent such conditions from interfering with all the other functions performed by electricity.

One of the most progressive movements of the year in the better design of electric motors was the production of anti-friction bearing motors by the Allis-Chalmers Manufacturing Co. These motors are equipped with Timken tapered roller bearings.

A new type synchronous motor is being offered to meet the need for a motor having extra high starting torque, low starting current, and the recognized high efficiency and good power factor characteristics of a synchronous motor. The new motor,



Visitors Get a Good Eye-Full While Inspecting Modern Electrified Hoisting Equipment

These are a few of the anthracite engineers who recently visited the mammoth new breaker of the Lehigh, Coal & Navigation Co. at Lansford. The men had just arrived at the hoist building

which houses two large electric hoists. One of them is provided with new electro-pneumatic contactors, a progressive step in the design of large hoist control apparatus.

in service during the summer. The largest one of these motors was installed at the Truesdale mine. It drives a Jeffrey double-inlet, exhaust, non-reversible, stepped, multi-blade fan supplying 380,000 cu.ft. of air per minute at a water gage of 3.8 in.

Another motor of this type was installed at Bliss Colliery. It is a 250-hp., three-phase, 60-cycle, 4,150-volt unit. Its synchronous speed is 109+ r.p.m., it has sixty-six poles. Besides being designed to carry a 250-hp. mechanical load it is rated at 200 kva. unity power factor, with a temperature rise of 40 deg. F. The normal direct-current field current is 23.9 amp. and the full load stator current is 28.1 amp. A small motor-generator set supplies the field excitation.

When the motor is started the outer frame revolves on its own set of bearings which are mounted in the same housing as the revolving element which is directly coupled to the fan shaft. After the stator has

fits were for single-unit instead of multiple-unit substations. A few double-unit control systems were furnished so that when the first machine becomes overloaded the second one is started.

Records of one of the largest manufacturers of automatic substation apparatus reveal the fact that there is still a marked tendency toward the use of motor-generators sets in preference to rotary converters. This company's list of automatic control outfits sold to date show that more than 75 per cent of them were for synchronous motor-generator sets.

MORE SECTIONALIZING

Greater appreciation of the desirability of automatically sectionalizing power feeders in mines was evidenced by many installations of automatic reclosing switch equipments. Many direct-current and alternating-current automatic feeder switches were placed in service to

available in standard ratings from 60 to 600 hp., is manufactured by the Westinghouse Electric & Manufacturing Co. It consists of a combination of two pieces of apparatus which are well established in the electrical power field.

The complete unit consists of a standard synchronous motor combined with a magnetic clutch in a single compact frame. The over-all dimensions are practically the same as the hitherto standard synchronous motors of the same ratings, with the exception of the length which is usually from 4 to 10 in. longer.

This clutch-type synchronous motor is started in the same manner and with the same equipment as used with a standard synchronous motor started under light load conditions. It is particularly adapted for driving crushing or grinding machinery, fans, rolls and other loads requiring high starting torque. The starting torque of the motor is the same as the maximum running

torque because the motor is brought to synchronous speed and fully excited before being connected to the load. It can thus exert any required torque up to the value of its pull-out torque during starting periods. Furthermore, this is accomplished without shock and at an acceleration rate controllable by adjusting the clutch excitation current through a rheostat. The clutch cannot be excited during starting periods, and as a result the rotor quickly reaches full speed.

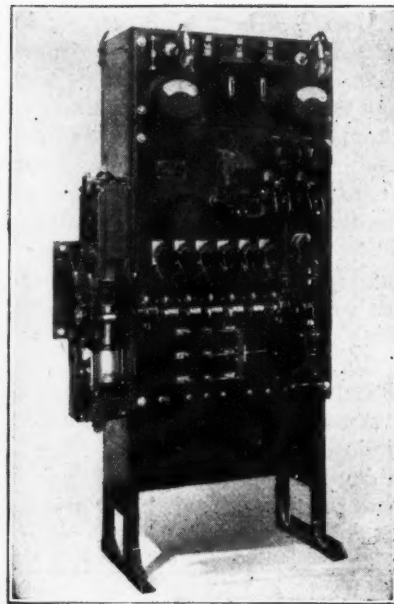
The rotor section of the clutch is faced with asbestos lining, riveted to a steel ring and made in halves for easy removal. The armature member of the clutch has a smooth surface where it comes in contact with the brake lining. Steel shims may be inserted between the asbestos lining and the ring to compensate for wear.

Ample clearance between the clutch plates is provided by spring plate construction. The armature member is mounted on a steel disk

which has sufficient flexibility to allow the clutch faces to make contact when the clutch coil is supplied with current. When excitation is removed, the flexible member will spring back into its normal position which provides sufficient clearance between the friction surfaces to prevent contact.

The motor shown in one of the illustrations is similar to one used in a new breaker built by the Repplier Coal Co. It is rated at 575 hp., 180 r.p.m. and 100 per cent power factor. An interesting feature is that it occupies but 2½ in. more space than a standard motor of the same rating.

Increased interest has been shown in the subject of power factor correction, a great demand is consequently growing for more synchronous motors and static condensers. Pioneering installations of new type synchronous motors have been made to breaker and tippie drives, also fans, pumps and air compressors. Several static condenser



Automatic Panel Reduces Costs

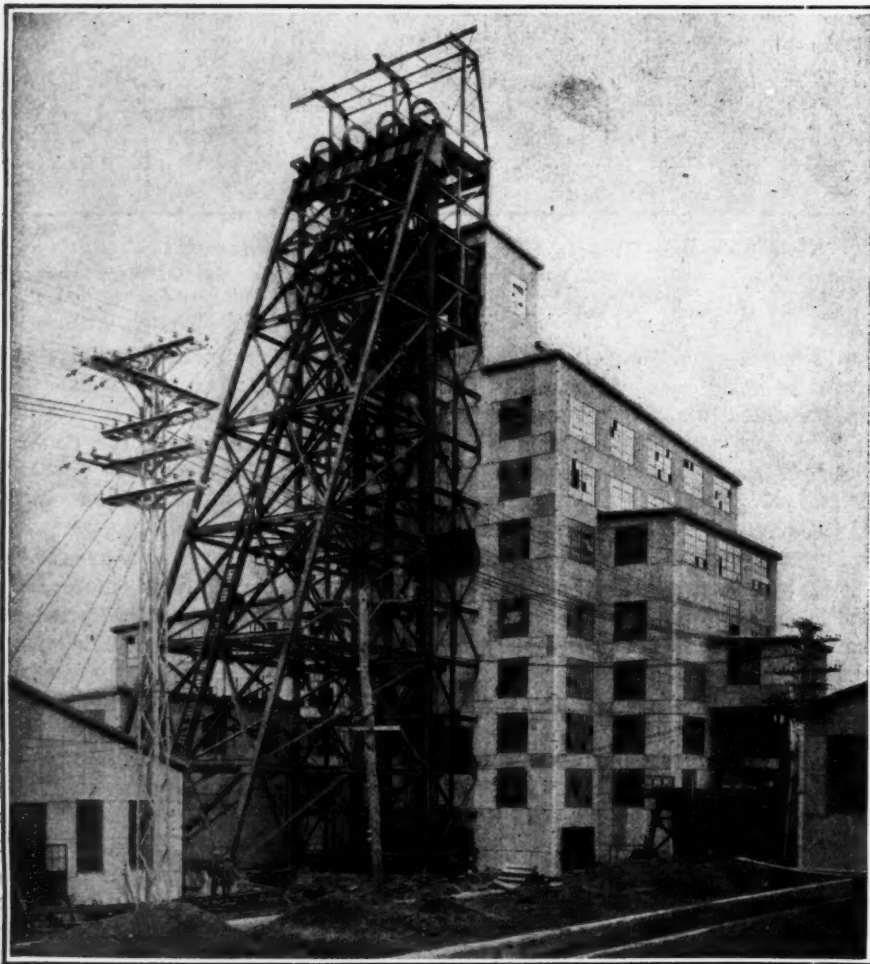
Accurate control and regulation of electrical equipment has taken away the difficulties occasioned by human effort.

outfits have been applied and proven unusually successful in reducing power costs, bettering voltage regulation, and releasing equipment capacities for useful work.

Measured by the success of past achievements, the future of electrical progress in mining will undoubtedly be great. Even today when relatively few mining companies are completely electrified, E. M. Herr, president of the Westinghouse Electric & Manufacturing Co., has said, "The coal industry, now the largest consumer of electric power, will continue to offer a large market for electrical apparatus."

Economic, market and labor conditions have exerted strong influences promoting electrification; today the advantages of electrical equipment have been proved. Companies which formerly owned the most modern types of steam-driven apparatus have found from experience and operating cost data that savings made by electric drives are big enough to pay capital charges and still show large returns on investments.

Thus the results of the old year forshadow bigger things for the new. Further application of electrical apparatus will be made along approved lines, new problems will be solved with specially designed devices and machines, companies already highly electrified will modernize their remaining steam units and completely supplant stand-by steam stations with internal combustion engines driving electric generators.



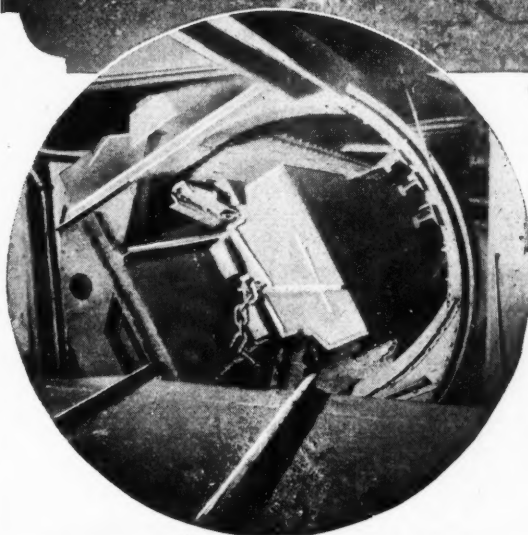
Built to Produce at Low Costs

This new breaker of the Colonial Collieries Co. is, no doubt, destined to set new standards of design, operation and success in the anthracite field. It is completely electrified and modern in every respect, in fact, many unique features successfully tried out in other industries are incorporated here. The building looks white because it is completely covered with Johns-Manville corrugated asbestos transite siding.

Does "Equipment Make the Mine"?



THIS center-shearing machine has been used in southern Illinois to increase lump output. Its cutter bar swings up and down in line with the center of the machine

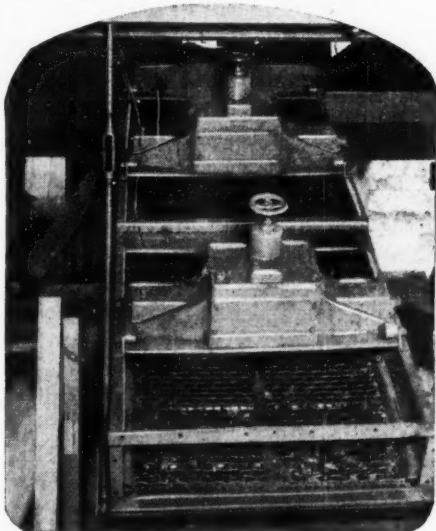


POSITIVE operation and large capacity are the characteristics of rotary dumps of this kind. Two or more solid-body cars can be discharged as quickly as one.

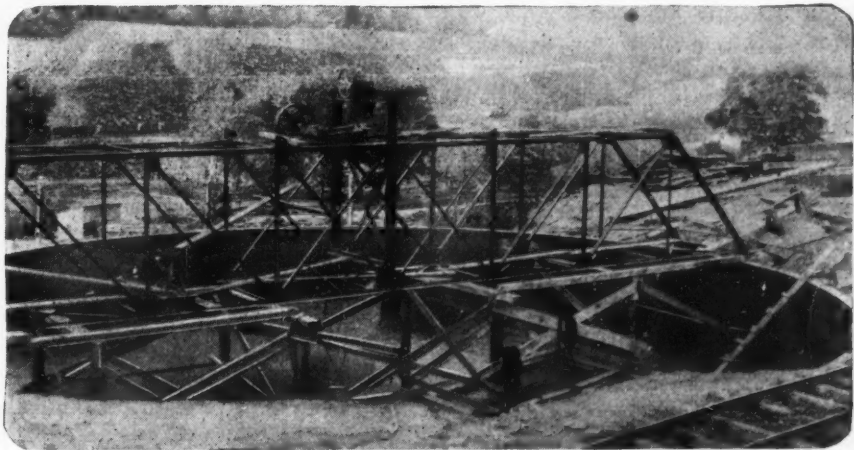
THE "rehabilitation" that has been going on in a number of mines in 1925 and mentioned in more or less detail in the following pages proves that it pays to "spend money in order to save it."



AFTER a shot in a center sheared face. The size of the coal produced speaks for itself.



THIS compact vibrating screen is popular for preparing small sizes of bituminous coal.



SLUDGE thickener at an anthracite colliery. Today even the smallest size is reclaimed. The water, freed from the sludge, is returned to the washery system.

Rehabilitation Is Big Feature in Progress Made During 1925 in American Mines

Cost-Cutting Devices Adopted With Avidity and Power Generation Much Improved—Managements Learn How to Spend Money in Order to Save It

By Frank H. Kneeland

Associate Editor, *Coal Age*,
New York City

IF ONE WERE to search for some terse expression that would effectively sum up the progress made by the coal industry during the past year in mechanical improvement he could hardly select a better term than the word "rehabilitation." And, as here used, this would mean "to put on a proper basis," not necessarily to restore to some former state of prosperity or glory.

During 1925 the coal industry was faced with approximately the same adverse conditions that prevailed during the preceding year. Demand was not particularly heavy or insistent, competition was keen, and as stated elsewhere in this issue, the weighted average realization for the bituminous product of the mines amounted to \$2.06, or two cents less than that realized during the preceding twelve months. Under such circumstances, only the fittest could hope to survive. The best energies of many operators were accordingly directed toward putting their mines, practices and equipment, in such condition as would enable them to weather the storm.

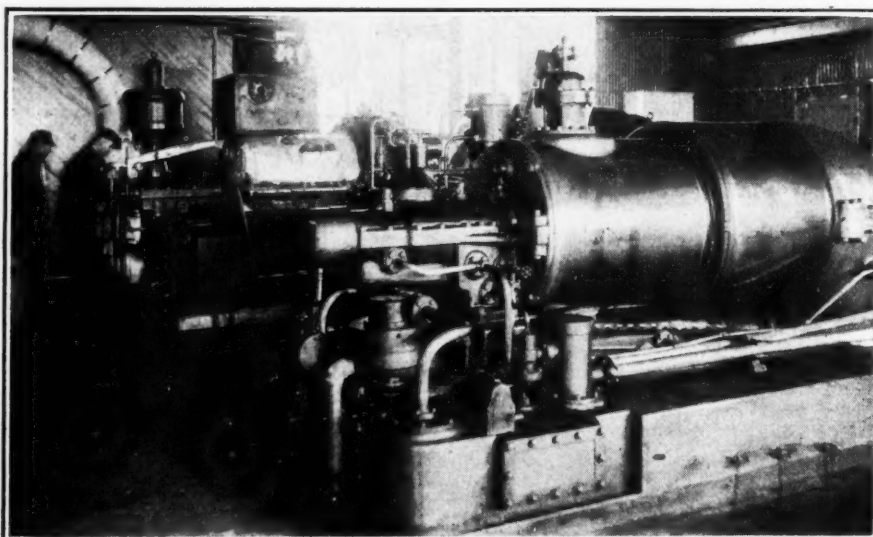
During the year just past, mines closed down literally by the dozens. On the other hand, the number of operations that worked six days per week steadily increased. In other words, the efficient operation pursued the even tenor of its way, while the hopelessly inefficient mine banked its fires, boarded up the windows, and went to the wall, where it belonged. And the fewer mines working satisfied the country's needs quite as effectively as did the larger number that tried to work in 1924.

Thus, throughout every field strenuous efforts have been made to adapt the mines to better working and to secure cheaper costs. Never before have mechanical devices been adopted with greater avidity, never have consolidations looking toward more efficient operation been more carefully projected, never have improvements in power generation and distribution been more carefully planned or more

quickly adopted, never have officials and executives scanned the details of their plants and practices more minutely in the hope of being able to cut down power consumption here, dispense with the services of a man there, or increase the quality of the product by one-half of one per cent somewhere else. Nor have managements been as niggardly as they

made at this operation—the method of distributing bits—paid for itself almost over night. The cost was practically negligible but the savings amount to some thousands of dollars yearly.

Another Illinois plant that well illustrates this trend toward rehabilitation and saving, is that of the Indiana and Illinois Coal Corp., at



Turbines Bring Down the Cost of Electric Energy

Years ago many coal companies found the purchase of electric power to their advantage. Today the cost of purchased energy has so increased that in many cases decided economies may be realized from the generation of electric current at the mine. This photo shows the interior of the new power plant of the Indiana and Illinois Coal Corp. at Witt, Ill. It is estimated that not only can power be generated here at a material saving over purchased current but that many of the expensive shutdowns to which mines operated on public service energy are always subject, will be avoided.

sometimes have been in making appropriations for improvements.

Probably few individual operations have carried this program of altering top and bottom conditions so as to meet more effectively developed needs, and of transforming equipment and practices in such a way as to assure less expensive production, than has the Valier Coal Co. of Valier, Ill. This mine invested approximately \$50,000 in a series of improvements both under and above ground. Yet, every change there made is now earning dividends and will pay for itself in not to exceed three years. Some of them will earn their full purchase price in less than twelve months. One big change

Witt. The mines of this company were formerly operated chiefly on purchased power with steam used to a limited extent, chiefly for heating water and for hoisting. The demands for power became so large however, and the expense involved became so great that a modern steam power plant has been erected at one of the mines and power is transmitted at high voltage to the company's other operations in the vicinity. In this plant, high-pressure superheated steam will be generated in modern water-tube boilers and utilized in turbo-generators operated condensing.

A few years ago a decided trend was apparent at the mines, particu-

larly those of the West and in the Appalachian Region, toward the adoption of purchased power. Today apparently the pendulum has started a swing in the reverse direction, as many mines are now forsaking the purchase of current and are building highly efficient generating plants of their own. Of course some mines are so located that water for plant operation cannot be obtained. The mercury boiler has not yet been developed to such a stage as to render it a competitor of the steam boiler for mine operations, and for plants that cannot secure an adequate supply of water the purchase of power is the only alternative at present available.

Utilization of mine refuse as fuel during the past year has been carried further than in the year preceding. At many operations pickings from the tables and sweepings from the mine and tippie tracks possess an ash content that render them unmarketable, yet they have a fuel value sufficiently high to make them available for the generation of power at the mine. This material may be burned either in the powdered form or on mechanical stokers. Naturally, the stokers must be of such kind and type that the ashes are either voided continuously, as is the case with the chain grate, or may be dumped periodically as with certain of the underfeed and other varieties. Probably one of the best examples of a "refuse-burning" mine plant to be started during the past year is that of the Fordson Coal Co. in Kentucky, which utilizes pulverized bone as a fuel. Such plants as this are blazing the way for cheaper power at the mines—power generated at a cost that will clip a few cents per ton off the f.o.b. price of the mine products.

MAKES STEADY PROGRESS

Mechanical loading, which got a real start in American mines only a few years ago, has steadily advanced during the past twelve months as reported in another article in this issue. Some mines are already operated by mechanical means exclusively, others use both mechanical and hand loading, while still others are trying out different makes and types of loaders in order to determine from actual experience which variety will afford the best commercial results. The findings of these operations will be watched with extreme interest.

Last summer a new mining, or rather a cutting, machine of decidedly



Cutting Pipe with a Torch Is a Time Saver

A few years ago oxyacetylene was the exception rather than the rule at mine repair shops. Today many shops are equipped with both oxyacetylene and electric welding outfits. The former has the advantage that it may be used for cutting also. The operator is here shown trimming up the end of a heavy pipe that he has just cut off with his torch. Much time and money can be saved around a mine plant by doing large cutting in this manner.

unusual type, was installed in a mine in Ohio. This saws the coal on a face, 100 ft. or more in length, by means of a flexible cutter passing around and driven by rubber lined sheaves. This cutter travels at high velocity, and the percentage of bug-dust made by it is approximately one-third of that made by the ordinary chain machine. In fact, the quantity of fine material produced is so small as to be almost negligible. The percentage of lump obtained is remarkably high, and no explosives are necessary to bring the coal down. Naturally, the present machine is largely experimental in character, but the results so far secured, both in performance and costs, are encouraging. Much interest will attach to its development.

Not only have efforts been made to increase the quantity of coal produced, but to improve its quality as well. In many regions, particularly those catering to a domestic market, the proportion of lump coal produced determines in large measure the return realized for the coal sold. As a result, any increase in the proportion of lump size obtained from the mine product is reflected directly in the amount realized per ton of output hoisted. While much can be gained by careful handling during transportation and preparation, it is at the face and in blasting that the really big economies can be made.

To this end the practice of center shearing the undercut face has been tried, especially in southern Illinois. At least two large coal companies

operating in this field have used shearing machines with excellent results, one firm having increased its proportion of lump by as much as 15 per cent. This company makes a shear cut in the center of an undercut face to a point about 8-in. above the kerf. The cutter bar is then raised to its full height and allowed to fall, thus breaking out the coal between it and the undercut. This break widens out for some distance upon either side of the shear. The face is thus snubbed to a certain extent. By this means a free end is provided in the coal face, the quantity of explosive necessary to bring the coal down is decreased, and the product of the shot is rolled out on the floor in better shape for loading. As in the case of many another improvement acting to the benefit of all concerned, however, more or less pronounced opposition to its adoption has been encountered from the miners' union.

BETTER PREPARATION DEMANDED

Year by year the public becomes more fastidious and exacting in its choice of coals. Or, what is another way of saying the same thing, it lays greater and greater stress on preparation, demanding a clean, carefully sized product. This has been reflected during the past year in the installation of better washing and flotation plants, as well as better screens in the tipples. Thus, the Chance and flotation process, and the Rheo washer have made great strides, particularly in the anthracite region of

Pennsylvania, although both processes are now invading the bituminous industry. Some remarkable results also have been obtained from the apparatus which for want of a better name has sometimes been called the hydroweir or hydrowasher. This machine separates the coal from its accompanying impurities in an upwardly moving current of water. It is most efficient in treating the smaller sizes, but has been successfully used on grades up to and including pea.

LESS ROOM REQUIRED

All of these devices take up less room than do the usual jigs and tables. Some of them, notably the Chance cleaner, may be used most advantageously if the breaker or washery is built especially to accommodate this type of machine. Some such installations have already been made and more are under construction and in prospect. The hydrowasher on the other hand is so much smaller than the ordinary jig of equal capacity that when installed in a breaker or washery built for jigs it gives the casual observer the impression that the building is far larger than necessary to house the equipment installed.

For treating the smaller sizes of bituminous coal the vibrating screen is in many instances supplanting the much larger oscillating screen or shaker. The vibrating screen trembles or vibrates under the action of a rapidly revolving, unbalanced weight, causing the tightly stretched wire cloth forming the screening surface to tremble in much the same manner as does the belly

of a violin under the action of the bow, strings and bridge. The capacity of these machines is high, and they may be made multiple-decked so that several sizes may be prepared on the same machine. They are becoming justly popular, particularly in the Middle-Western fields, where the preparation of small sizes is carried to a fine point.

Nor have improvements in equipment been confined to machines employed directly in coal production or preparation. There is no question but that the caterpillar mounted stripping or overcasting power shovel possesses advantages over the type that must be provided with rails or track. Heretofore it has not been considered possible to mount a shovel of the size now used in stripping operations in this manner. During the past year, however, a big stripping shovel of this kind has been built and mounted on caterpillars.

This machine, which was constructed for the United Electric Coal Co., of Danville, Ill., and intended for use in one of this firm's strip pits in the western part of that state, will weigh over 1,000,000 lb. Naturally, it is of the full-revolving type. The generous use of alloy steel in its construction has rendered its caterpillar mounting possible. The operation of this new shovel will be watched with keen interest by coal men interested in stripping.

One of the potent factors in this program of rehabilitation and cost lessening, has been the further adoption and installation of automatic substations and automatic pumping stations. The electrical transmission

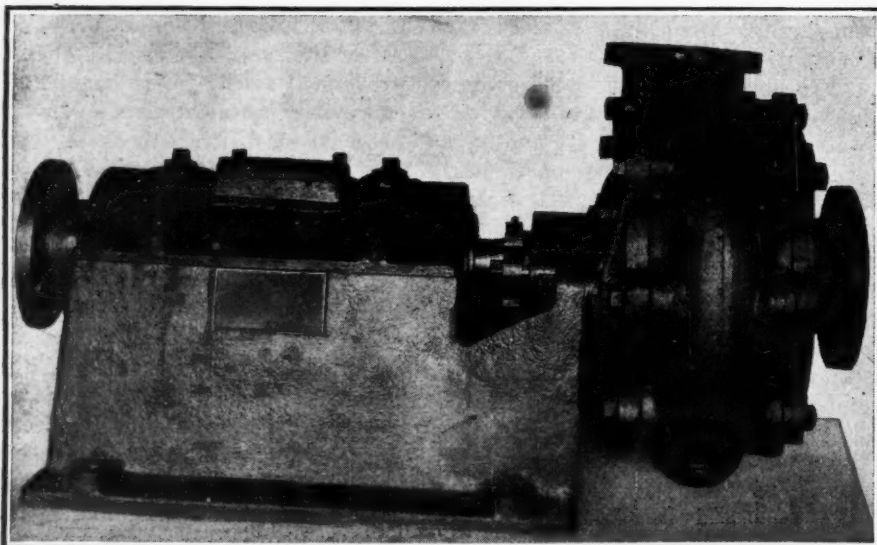
of power within the mines has now become all but universal. Placing the control of substations and pumping stations in various electrical devices which "never slumber nor sleep" but are constantly "on guard" permit the men previously employed to care for and manipulate such installations to be used in productive work elsewhere. Stations of this kind have fully demonstrated their utility and practicability. Last year saw several of them installed, and their use will unquestionably increase in the future.

In the matter of mine haulage, several improvements have been made. Although many of these may rightfully be considered as being of a minor character, they have, nevertheless, an appreciable influence on the cheapening of costs. Bigger cars are today the rule. In some instances this necessitates the employment of larger locomotives; in others it merely means doubling or articulating units: that is, placing two or more under the control of one man. This limits the stress imposed upon the track to the weight of one locomotive.

CARS BUILT BIG AND LOW

Present practice tends toward the large, low, solid body, box type of car intended for discharge by means of a rotary or some other type of dump which will turn the car almost completely upside down. Automatic couplers have been employed with good results.

Grease lubrication applied under high pressure is largely supplanting the older oil lubrication. This change has been contemporaneous with the extensive adoption of the roller bearing on transportation equipment. Packing a roller bearing of large capacity with grease under pressure once in six months is far cheaper and more satisfactory than employing a boy continuously to oil the cars. In fact the playful young oiler, whose presence in the tippie or dump house or on the shaft bottom or landing, was once common and who beguiled the monotony of the day's labor by occasionally squirting blackstrap at one or more of his associates even though such a course might necessitate a hasty and precipitate retreat, is now fortunately almost extinct. The "car greaser" with his pail and "squirtguns" was unquestionably a picturesque figure, but he could not compete in cost or efficiency with the "power gun" that now lubricates the cars at comparatively infrequent intervals.

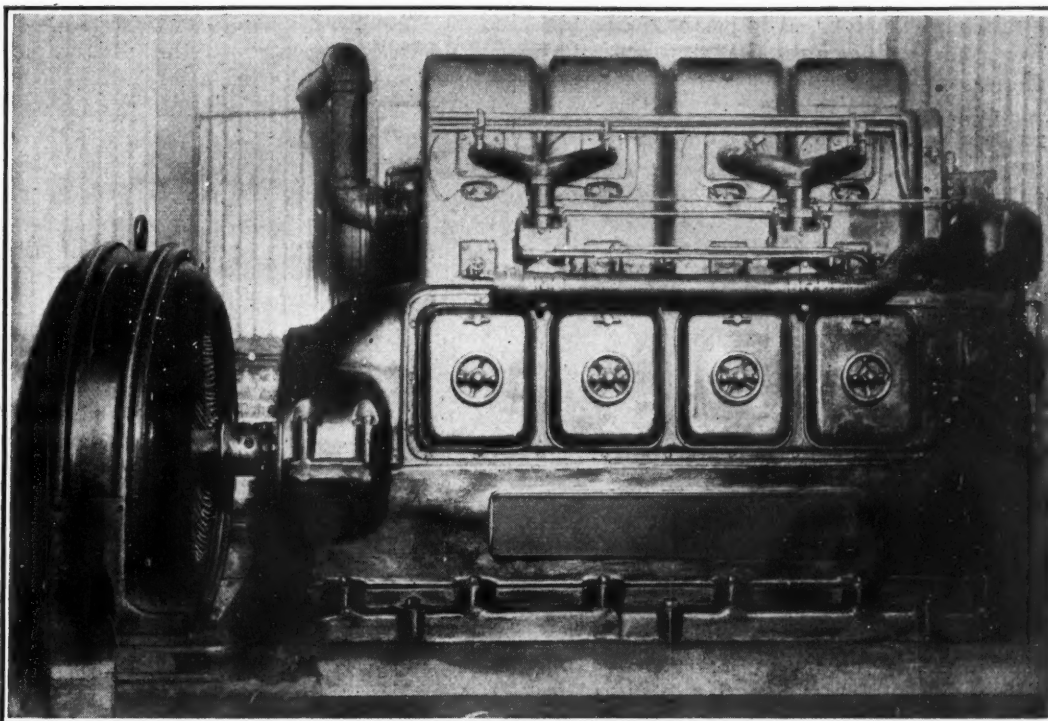


New Pump for Special Flotation Processes

For the several flotation methods of cleaning coal now used the Morris Machine Works has developed this new pump. All wearing parts of this unit are made of manganese steel, thus it has been possible to combine the high efficiency of the usual type centrifugal pump with the ruggedness and durability of a dredging pump.

Dependable Stand-by

Should power for any reason go off the line, this stand-by engine can be started on short notice and is large enough to furnish emergency current. The installation of such units as this is becoming quite a common practice, especially at mines that operate on purchased energy. With a machine of this kind a mine is seldom completely "down and out."



Further progress has also been made in adapting the use of electric haulage to so-called gassy mines. This, however, has largely taken the form of improvements in the details of construction of the storage battery locomotive and the portable power unit, as well as in their charging facilities. A new binder to hold the active element in the battery plate was discovered in England. This apparently possesses great possibilities for increasing the capacity, life and efficiency of the battery itself. Experiments with this material have not yet been completed even in Europe, and, therefore, it is here mentioned merely to indicate a possibility of the future.

For many years coal mines in England and English possessions, including Canada, have been large users of steel mine car wheels, whereas this country has clung tenaciously to the chilled tread cast-iron wheel. Within the recent past however, the steel wheel has made its appearance in the United States chiefly in the mines of the South. Admittedly this type of wheel possesses many advantages chief of which are its greater lightness, toughness and strength. Decreasing the dead weight of a car is equivalent to increasing its carrying capacity as well as adding to the coal handling capacity of the locomotive.

Naturally, the railroads have perfected the science of material handling and brought it to a point well beyond that attained by other in-

dustries. As coal mine haulages grow longer and heavier they parallel more and more closely the problems of railroading. The mines may well in many cases, therefore, take a leaf from the notebook of the common carriers and emulate their practice. Some operations are doing this very thing and installing not only telephonic dispatching systems but also railroad switchboards provided with electrically lighted targets, semaphores or their equivalents, remote control switches and the like, all of which tend toward the rapid and efficient movement of the coal from the face to the shaft bottom. Valier furnishes an excellent example of work of this kind although many other mines are making improvements of a similar or parallel nature.

ROCK DUSTING LEADS

Probably the chief safety measure extensively employed during 1925, at least the one which is most spectacular and which is intended to forestall the most spectacular of mine accidents, was rock dusting. Although this practice has been followed for years by some coal companies, it did not receive general attention until about 1924. Work begun during that year was continued in 1925 and now more than 200 mines producing in excess of 10 per cent of the country's coal have been treated with this inert material. Rock dust has demonstrated its effectiveness as a killer of explosions upon several occasions. Its use is now compulsory by law in

some states and it is only a question of time until most mines throughout the country will be thoroughly protected in this manner.

During the past twelve months electrification of mine equipment kept up the pace established in previous years. Even at mines where the hoist is installed in close proximity to the boiler house and steam is therefore available for use in hoisting engines it has been found advantageous in many if not most cases to operate the hoist electrically. Power consumed by an electric machine is easily and accurately measurable, thus revealing not only the average but the peak loads as well. This fact has been largely responsible for the adoption of the cylindro-conical drum in lieu of the older cylindrical and double conical forms. For a given capacity this shape of drum imposes a smaller inertia load on the machine than do either of the other forms mentioned. This type of drum, therefore, is the one usually selected on present-day hoists.

Purchased power has brought problems of its own. One of the most exasperating of these is line failure. During recent years it has become increasingly customary to make provision at mines served with purchased energy for operating at least the fan and the man hoist should power go off the line from any cause. To this end stand-by engines and generators have been provided. In many cases the stand-by unit consists of a vertical multi-cylinder engine direct connected to an

electric generator. The year 1925 saw the installation of many machines of this kind.

According to the old fable the reeds bent before the wind and escaped injury whereas the sturdy oak stoutly resisting the force of the gale was destroyed. A somewhat similar principle has been put to good effect by lining mine pumps with rubber. In machines of this kind handling gritty water or that carrying much foreign matter a non-yielding metal is quickly abraded or cut away whereas rubber, because of its resiliency is little affected. An advantage inherent to the rubber lining is the fact that it is almost inert to the action of acid in such concentrations as are usually encountered about coal mines. Pumps of this type are being given a thorough trial in coal preparation plants using the sand flotation process. This type of service closely parallels their use in the metal industry in pumping concentrator slimes.

It would be manifestly impossible within the confines of an article of

this kind to enumerate even briefly the many devices applicable to the mines that have been introduced, developed or improved during the past year. Their number and variety have been too great. The reason for the intense interest manifested in mechanical devices intended to replace hand labor and in advanced methods for improving the quantity and quality of the mine product is not hard to find. Highly competitive conditions have brought the bituminous industry face to face with the necessity of reducing costs. In only slightly lesser degree the same is true of the anthracite industry as well. When muscular energy under the present wage rate costs anywhere from \$4 to \$8 per horsepower-hour, whereas an equal quantity of power in the form of electric current may be delivered at the working face for approximately 2c., it is only logical that mechanical energy will be used whenever and wherever its adoption is possible.

Again, although improved methods of operation, such as center shearing

of the working face, may not increase the output produced by so much as a single ton, yet if it improves the quality sufficiently or to such a degree that the increase in realization more than outweighs the added expense, this practice should by all means be adopted. If other practices that improve the quality of the output, such as cushioned shooting, for instance, interfere with state laws that were framed long before these practices were invented, it is high time that the statutes thus infringed were modified.

Many long strides have been taken toward the mechanization of American coal mines; many others yet remain to be taken. The progress accomplished during the recent past unquestionably will be continued and extended during the year that lies ahead. The industry is today confronted with a new set of conditions which it has never before been required to face. It is solving its difficulties by the adoption of improved practices and improved equipment. The mines are being rehabilitated.

Coal Produced in West Virginia and Wyoming in 1924^a

(Exclusive of Product of Wagon Mines)

Net Tons													
West Virginia County	Loaded at Mines for Shipment	Sold to Local Trade and Used By Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines	Total Quantity	Value		Number of Employees			Average Number of Days per Man Worked	Average Tons per Man per Day	
						Total	Average per Ton	Underground	All	Surface			Total
Barbour.....	1,772,449	30,160	10,490	23,488	1,836,587	\$3,379,000	\$1.84	1,432	450	267	2,149	146	5.86
Boone.....	2,310,928	26,383	5,261	.....	2,342,572	3,882,000	1.66	1,530	752	506	2,788	152	5.53
Braxton.....	179,747	45,067	5,597	.....	230,411	358,000	1.55	193	81	63	337	175	3.90
Brooks.....	792,469	984,701	300	.....	1,777,470	3,960,000	2.23	1,294	422	223	1,939	160	5.74
Clay.....	868,733	23,887	10,758	.....	903,378	1,580,000	1.75	478	186	151	815	214	5.18
Fayette.....	7,632,720	127,388	47,154	231,227	8,038,489	16,377,000	2.04	5,336	3,052	1,554	9,942	172	4.70
Gilmer.....	114,791	2,868	3,621	.....	121,280	187,000	1.54	47	27	18	92	208	6.32
Greenbrier.....	982,704	61,263	5,647	.....	1,049,614	1,829,000	1.74	390	261	133	784	230	5.83
Harrison.....	5,246,245	169,583	6,323	.....	5,422,151	9,098,000	1.68	4,026	1,486	896	6,408	134	6.30
Kanawha.....	4,044,359	105,720	20,137	.....	4,170,216	6,952,000	1.67	3,133	1,615	808	5,556	148	5.07
Lewis.....	14,454	21,148	.....	.....	35,602	69,000	1.94	52	21	11	84	109	3.90
Lincoln.....	266,931	3,125	630	.....	270,686	391,000	1.44	283	83	93	459	149	3.96
Logan.....	17,375,019	222,335	13,109	.....	17,610,463	28,239,000	1.60	6,647	4,039	1,962	12,648	219	6.35
McDowell.....	17,438,461	164,900	168,377	57,958	17,829,696	35,657,000	2.00	7,140	5,937	3,474	16,551	192	5.62
Marion.....	4,647,393	193,227	68,469	21,086	4,930,175	9,543,000	1.94	3,498	1,777	750	6,025	140	5.83
Marshall.....	1,084,580	328,643	84,135	.....	1,497,358	3,118,000	2.08	1,076	337	202	1,615	199	4.65
Mason.....	33,493	28,512	2,464	.....	64,469	129,000	2.00	75	24	15	114	121	4.69
Meigs.....	3,443,017	41,813	5,099	69,210	3,559,139	7,182,000	2.02	1,564	1,134	854	3,552	226	4.44
Mineral.....	262,804	7,890	2,018	.....	272,712	482,000	1.77	401	125	118	644	118	3.60
Mingo.....	4,850,344	36,371	11,590	.....	4,898,305	8,387,000	1.71	1,940	1,429	859	4,228	226	5.13
Monongalia.....	6,482,775	115,301	56	14,528	6,612,660	10,470,000	1.58	3,711	1,431	650	5,792	190	6.00
Nicholas.....	235,394	18,608	9,980	.....	263,982	538,000	2.04	249	116	78	443	155	3.84
Ohio.....	1,831,431	293,930	5,298	.....	2,130,659	4,161,000	1.95	1,474	431	145	2,050	217	4.78
Preston.....	1,282,227	66,795	4,364	115,166	1,468,552	2,598,000	1.77	1,230	484	331	2,045	150	4.80
Putnam.....	83,360	747	1,796	.....	85,903	172,000	2.00	177	102	47	326	78	3.39
Raleigh.....	9,924,984	100,804	81,986	.....	10,107,774	18,840,000	1.86	4,536	3,032	1,574	9,142	206	5.36
Randolph.....	497,635	20,445	13,136	.....	531,216	1,124,000	2.12	380	128	80	588	179	5.05
Taylor.....	285,153	15,240	284	.....	300,677	451,000	1.50	734	304	90	1,128	55	4.88
Tucker.....	632,256	9,442	34,577	560	676,835	1,494,000	2.21	565	210	78	853	160	4.95
Upshur.....	541,457	18,043	10,728	.....	570,228	992,000	1.74	387	145	78	610	159	5.88
Webster.....	15,975	558	.....	.....	16,533	57,000	3.45	35	8	5	48	135	2.55
Wyoming.....	1,745,163	21,207	12,953	.....	1,779,323	3,046,000	1.71	893	771	475	2,139	162	5.12
Other counties c.....	249,863	1,401	6,518	.....	257,782	487,000	1.89	161	80	68	309	207	4.03
Total.....	97,169,314	3,307,505	652,855	533,223	101,662,897	185,229,000	1.82	55,067	30,480	16,656	102,203	182	5.48

Wyoming County													
Albany and Uinta.....	16,595	10,177	3,334	.....	30,106	83,000	2.76	28	5	13	46	183	3.58
Campbell, Johnson and Weston.....	136,470	13,770	13,191	.....	163,431	467,000	2.86	90	49	36	175	212	4.41
Carbon.....	496,496	9,296	16,400	.....	522,192	1,431,000	2.74	193	136	78	407	194	6.61
Fremont, Hot Springs and Park.....	509,871	6,221	35,638	.....	551,730	2,004,000	3.63	385	230	131	746	173	4.27
Lincoln.....	1,263,073	11,949	67,869	.....	1,342,891	3,803,000	2.83	877	352	271	1,500	222	4.04
Sheridan.....	846,924	28,732	4,306	.....	879,962	1,568,000	1.78	651	162	142	955	110	8.41
Sweetwater.....	3,177,878	31,910	57,368	.....	3,267,156	8,971,000	2.75	2,061	838	385	3,284	170	5.85
Total.....	6,447,307	112,055	198,106	.....	6,757,468	18,327,000	2.71	4,285	1,772	1,056	7,113	176	5.41

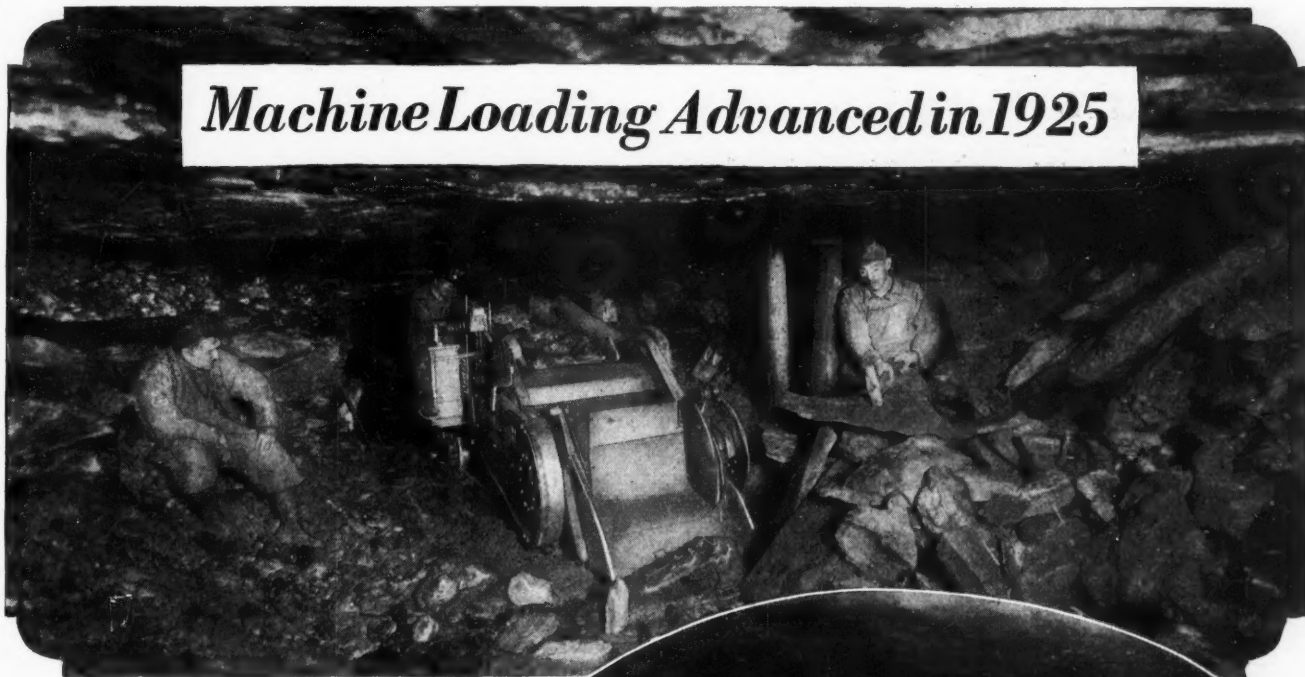
^a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. The number of active mines of commercial size in West Virginia was 1,666 in 1923 and 1,220 in 1924; in Wyoming 62 in 1923 and in 1924. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only.

^b Includes also loaders and shotfirers.

^c Grant, Hancock and Wayne.

Statistics issued by U. S. Bureau of Mines.

Machine Loading Advanced in 1925

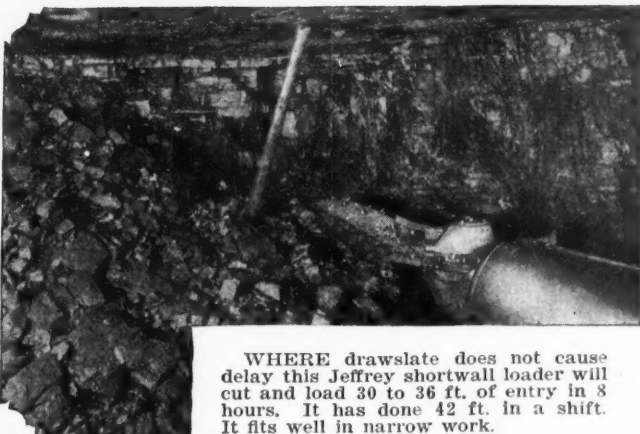


CLEANING up a gangway with a Myers-Whaley in West End Coal Co.'s anthracite mine at Mocanaqua, Pa.

FIVE HUNDRED machines are covered in the performance record spread on the pages that follow. These give a definite impression that underground loaders are an indispensable aid in mining.



THE ENTRYLOADER (left) solves the sore problems of loading and transportation. In the platform, overhanging the mine car, is a hoist which draws the bucket (shown above) to and from the face. The operator of the scraper is on the entry and cannot see the bucket when it is at the face. Yet the control is so positive and flexible that this man can feel conditions and the position of the bucket with respect to the face.



WHERE drawplate does not cause delay this Jeffrey shortwall loader will cut and load 30 to 36 ft. of entry in 8 hours. It has done 42 ft. in a shift. It fits well in narrow work.



THIS Goodman power shovel is a highly compact machine mounted on caterpillars. In service it is held at any predetermined position by a hydraulic jack.

Experience in 1925 with 500 Mechanical Loaders Clears Way for More Progress in 1926

These Machines, Exclusive of Conveyors, Handled Eight Million Tons or 1½ per Cent of Country's Output—Fewer Delays by Machine Failure

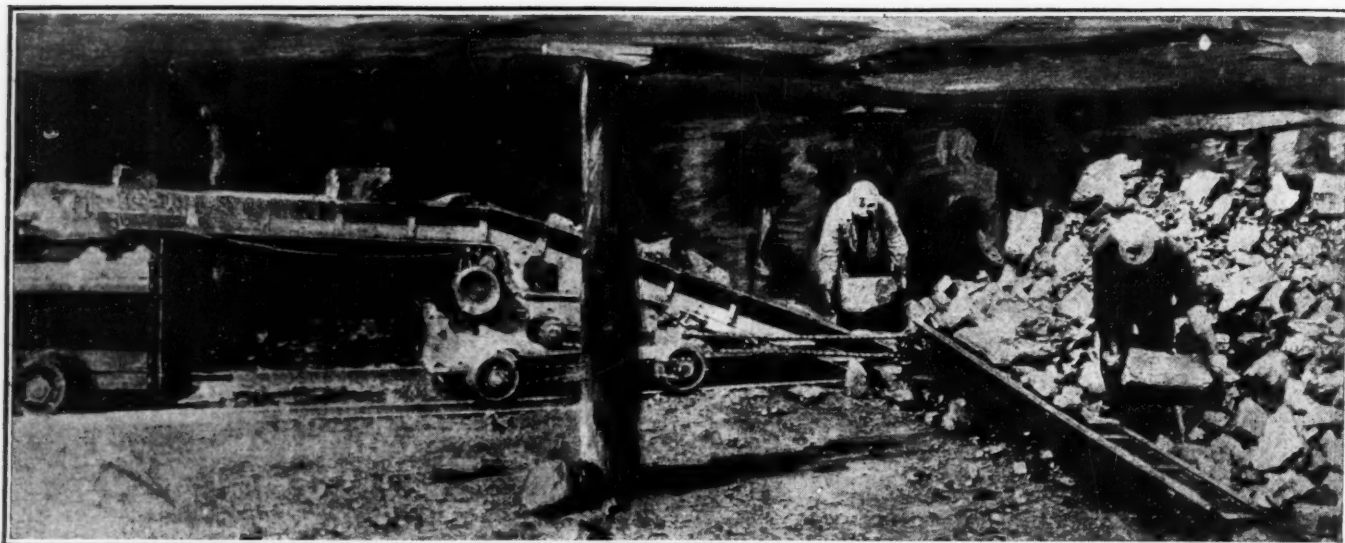
DURING 1925 underground loading by machines flourished in some places, developed slowly in others or died out, according to the degree of its opportunity. Experimentation, practiced broadly, stimulated its growth however. A variety of experience with various machines in many fields contributed to the industry's knowledge of the art and in recording the results it is the intention in this article, and

alone slightly in excess of 1½ per cent of the entire production of bituminous coal for 1925. Various types of conveyors produced during the year about 1 per cent, so that the two handled at least 2½ per cent of the year's bituminous production.

This survey has accounted for about 500 machines, which are in more or less constant use. Most of these, loaded more than 75 tons per shift. By assuming this as an av-

the company claims the installation is beyond the experimental stage. The Ayrshire Coal Co., in Indiana, is gaining a consistent output of 1,200 tons per day with Joys.

Two completely mechanized mines of the Pennsylvania Coal & Coke Corp.—Ehrenfeld No. 8 and Arcadia No. 42—jointly produce 1,200 tons per day using scrapers and portable conveyors. Six other companies have reported daily averages of machine



Jeffrey Pit-Car Loader Proves that Mechanical Complications Are to Be Avoided

One of the simplest and most effective loading devices thus far developed is the pit-car loader which is nothing more than a port-

able inclined conveyor into which coal is loaded by hand and elevated to the mine car. In wide places portability is most helpful.

another in this issue on the kindred subject of conveyor usage, frankly to give the good with the bad. The industry profits by its failures as well as by its successes.

In this magazine's review a year ago of progress in mechanical loading it was estimated that 1½ per cent of the nation's coal produced in 1924 was loaded mechanically into mine cars or by hand into conveyors. It was predicted that the tonnage of 1925 loaded by these means would exceed the combined output similarly produced in all preceding years. This prediction was fulfilled. The total tonnage handled by loading machines was nearly 8 million tons.

Definite figures of production from a number of mechanized operations, added to piecemeal data from others give a total for machine loaded coal

for 200 days, the 1½ per cent estimate stands as reasonably accurate.

Investigation brought to light a good many interesting facts as to loading machine performance during the year. The Pocahontas Fuel Co. produced with Coloders about 1.6 million tons and in this respect continues at the top of all single companies. Joy machines in operation during 1925, numbering 175, have produced nearly 4½ million tons. One of these machines alone in the mine of the Gay Coal & Coke Co., in Logan County, W. Va., produced about 70,000 tons last year, working two shifts each day. The Monitor Coal & Coke Co., in the same field, is reported to be producing regularly a minimum of 200 tons per shift using a Goodman power shovel, and

loaded coal in excess of 1,000 tons, with requests that their identification be hidden. Production of 500 tons per shift by this means is rather common.

Last year at the Acme mine of the Sheridan-Wyoming Coal Co., in northern Wyoming, eight Goodman power shovels and four Joys were installed in a program of complete mechanization. During November of last year the machines working in rooms 26 ft. wide and 10 ft. high loaded nearly 200 tons per shift each. The coal is 40 ft. thick but only 10 ft. of it is brought down in first mining. Other machines while working two-thirds of their time in pillars and the remainder in entries averaged about 160 tons per shift each.

Driving of entries by machine has



Correct Drilling and Shooting Are Important to Machine Loading Success

These men are drilling coal for mechanical loaders, expert shooting of coal is essential. That being the case, responsibility for drilling must be vested in men who understand shooting. The electric drill insures the proper location of holes. The coal shown at the right was shot too hard. The need for better blasting

methods where loading machines are operated is imperative. Where the coal is pulverized, as it was in this room, the loss of lump coal offsets any saving in loading. This subject is getting more attention nowadays and will be one of the leading subjects at mining conventions next year.

demonstrated its superiority over the hand method. By and large, loaders and conveyors are already achieving satisfactory results in entry work. The reason for this is, no doubt, the close supervision which such operations receive by reason of the anxiety of the operator to push development. Even where the cost of driving mechanically is slightly greater than that incurred by hand loading, the operator is satisfied with his investment because the advance is more rapid.

Almost every one of the loading machines now in use has been applied in some degree to the driving of narrow places. The Pennsylvania Coal & Coke Corp. has been successful with a small type scraper in this work. This device and two others—the Jeffrey 43-A shortwall loader and the McKinlay entry driver—belong in one class because all three operate more or less continuously in a single place. The shortwall loader and the scraper, of course, can be relocated readily, but the McKinlay machine must be torn down at the old location and reassembled at the new or else it must cut its way through solid coal to a new place.

The Jeffrey shortwall loader is demonstrating its ability to advance an entry 30 to 36 ft., or 5 to 6 cuts, in a shift where the roof is good and the machine, therefore, is not delayed by the handling of roof material. This machine cuts and loads, discharging into a sectional conveyor. While a place is being cut it is being drilled also and the machine, con-

sequently, is idle only during the time required for shooting and clearing away the smoke. Incidentally this lost time is little inasmuch as a blower moves smoke speedily.

At one of the mines of the Fordson Coal Co. at Kentenia, Ky., one of these machines was in service during the last six months of 1925 and in that period advanced an entry 2,651 ft., which is equivalent to about three 6-ft. cuts per shift. Following is the comment of this company on its experiences with this machine:

SHORTWALL LOADER INSTALLED

"On June 15, 1925, one of the Jeffrey shortwall loaders was put in service in entry driving. In conjunction with this machine is a sectional conveyor composed of 6-ft. segments which are added one at a time as the loader advances in the entry. This conveyor is laid along one side of the entry parallel to the mine track for the cars which carry the coal away from the conveyor. This arrangement necessitates the use of a 7-ft. cross conveyor for carrying the coal from the sectional conveyor to the mine cars. At this transfer point, which is advanced about every 250 ft., a pot hole must be shot in the roof over the discharge point above the mine car.

"The rate of advance with this machine depends on several factors, such as the height of coal, width of entry, character of top and coal and any regulations or state laws governing shooting. One of the claims made for this machine—that it will

achieve continuous operation—does not hold good where heavy drawslate is encountered. Under this condition this machine is at a disadvantage because it is delayed while the operating crew cleans up the slate. In one of our experiences we encountered a heavy drawslate which could not be held by timbers. As the operating crews on our loaders are among the highest paid, we were compelled to use high-wage men on work which is usually accomplished by men who are paid the least; besides, we suffered a loss due to the part-time idleness of the machine.

"Although the machine has disadvantages it has made a pretty fair record as to cost, production and advance during the last six months or so. Mechanically it has given us little trouble. One of the biggest items of repair has been the charge for feed ropes which drag the machine across the face."

The Fordson Coal Co. installed the first new type McKinlay cutter and loader, which started to operate early in 1925. In the eight months of the year in which it was in actual operation this machine advanced an entry 3,961 ft., cutting and loading 7,205 tons. During the month of June it advanced the entry 745 ft. On this machine the company reports to *Coal Age* as follows:

"The McKinlay cutter and loader is strictly an entry driving machine and is not adaptable to wide work. It operates most favorably where long entries are to be driven and, therefore, little moving of the ma-

chine is necessary. Due to the size and weight of the machine it is necessary to take the machine apart to move it any great distance, which requires at least 15 days and the services of about six men. On one occasion we moved the machine 1,800 ft. by driving it through solid coal, deciding that this course would be cheaper than its alternative. While driving to the new location it was necessary to negotiate two right-angle turns. This was done by driving it 40 ft. beyond the turning point which was widened out in the new direction by four cuts of a mining machine, allowing the machine to be backed and slewed in the new direction under its own power.

"Our McKinlay was idle approximately four months during 1925 due to breakdowns which were not quickly remedied, ours being the first machine of its kind in commercial use. With further developing and some redesigning we think this machine will have real promise as an entry driver.

COST OF ADVANCE LESS

"Our experience has been that the cost per ton of coal mined by this machine is slightly greater than that of hand loaded coal. The cost per foot of advance by the machine, however, is about 2 per cent less than that incurred when the driving is by hand. The reason for this is that the section mined by the machine is of less area than that of an entry driven by hand."

A test machine of this type, equipped with a 75-hp. motor which is much larger than that on the McKinlay machine at the Fordson operations, is now in use in the Nason mine of the Illinois Coal Corp. It is equipped with a conveyor under which two mine cars can be placed. In this mine it has made an advance of 42 ft. in 8 hr. which is not the limit by any means, for frequently it has advanced 10 ft. in one hour.

A wide difference of opinion prevails as to whether loaders and conveyors should be applied to the old room-and-pillar layout with possibly some few modifications or whether these devices should be used on long faces to gain the benefit of economies long face layouts theoretically provide. Many failures in trials of long faces can be attributed to lack of knowledge and experience. Roof action, as applied to each particular condition, is not well enough understood. So attempts to control the roof in many cases have failed.

Thus far no loader that is easily portable has been applied successfully to advancing or retreating long faces. This, however, does not apply to scraper loaders, to the Jeffrey conveyor loader or to the O'Toole long face machine, none of which can be moved quickly from place to place. All portable loaders thus far developed have been working in rather narrow places and on pillars which sometimes are slabbed. This slabbing is the nearest approach to an application of portable loaders to long face work.

MACHINE PRODUCES 70,000 TONS

It is by this arrangement that the Gay Coal & Coke Co. established its enviable 1925 record of 70,000 tons from one machine. In the section of the mine worked by this loader several inches of loose roof slate overlies the coal; also there is a heavy shale band in the coal which is removed by a turret cutter. Pillars 135 ft. wide and 350 ft. long are mined by slab cuts which move toward each other and toward the long axis of the pillar. The seam is approximately 6 ft. thick.

The Bertha Consumers Co. is operating five Joys and one Myers-Whaley machine in the Eureka mine which is located near Morgantown, W. Va., and in the Pittsburgh seam. Here a typical Pittsburgh region room-and-pillar layout is employed in which rooms are driven and pillars recovered by means of these machines. Rooms which are 18 to 20 ft. wide on 50-ft. centers are driven 250 ft. long. The pillars are drawn by butoff places 18 ft. wide supported by a 6-ft. stump or peg which is pick-mined. As this mine was closed during much of 1925 because of a fire, records of full-time operation are not available. An output of as much as 236 tons has been produced by a single machine in one shift and on many days individual machines have loaded 150 tons.

JOYS LOAD AYRSHIRE'S OUTPUT

The Ayrshire No. 6 mine of the Ayrshire Coal Co., Indiana, is now producing about 1,200 tons per day, all of which is loaded by Joy machines. The No. 5 seam here is about 6 ft. thick and is overlaid by draw-slate which varies in thickness up to 18 in. and comes down with the coal as a general rule. The depth of cover is about 100 ft. There is no gas, and no dust is stirred up by the machines. Rooms are 26 ft. wide on 33-ft. centers. The output is ob-

tained by seven machines on the day shift and three on the night shift.

Inside and outside, about 130 men are employed, all of whom are paid a day wage except the cutters who are paid the tonnage scale provided by the agreement for the district. The coal is undercut and drilled electrically. This company finds that expert shooting of coal almost entirely offsets the breakage due to machine loading. The presence of draw-slate requires one man to clean up after each machine, and to set timber and pull down loose slate. David Ingle, the president of the company, believes long faces could be worked quite satisfactorily in this mine if it were not for this draw-slate.

At present only 60 working places are maintained as against 180 for an equal output under hand loading methods. The plant's labor cost has been reduced about 30 per cent but the supply cost has increased appreciably because the company must stand the overall charge for drilling and shooting, of which the cost of explosives is by far the biggest item. Additional power charges and machine repairs contribute to the increase.

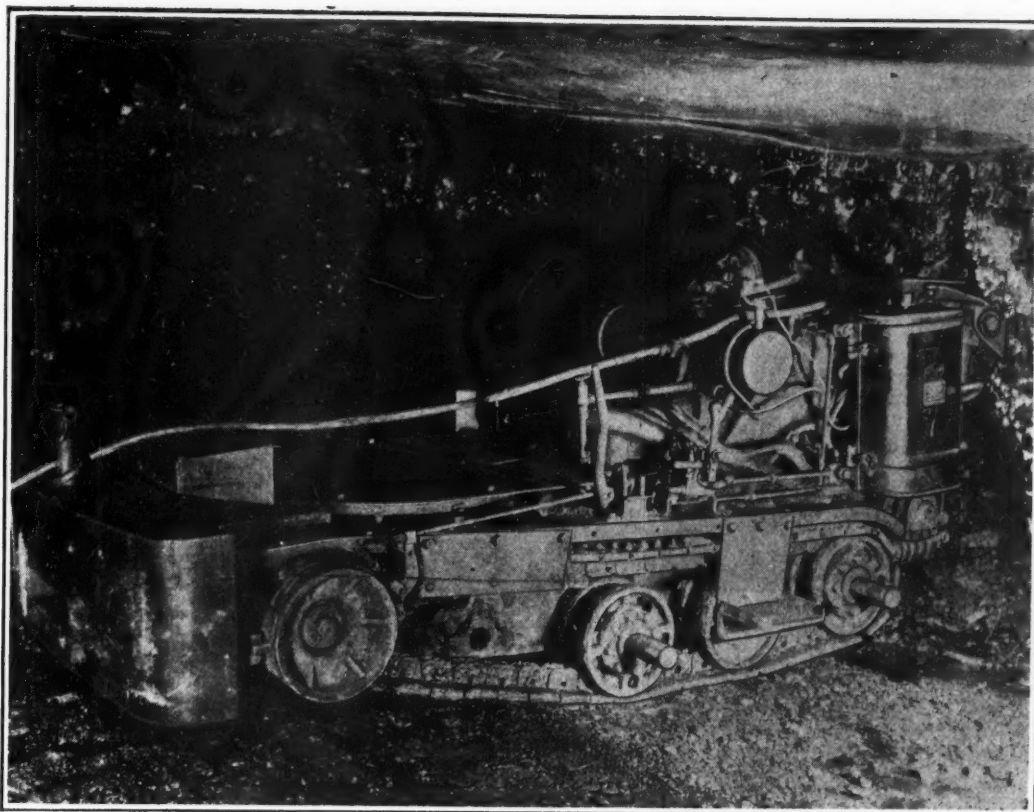
MACHINES AID POCAHONTAS CO.

The Pocahontas Fuel Co. continues to roll out big tonnages mechanically from its mines in the Pocahontas No. 3 seam. A few additional machines and bettered efficiency of those in long time operation have enabled this company to increase its machine loaded output from 1.25 million tons for 1924 to 1.6 million tons last year. Four Coloders have been installed in the new Faraday mine of this company and three more machines will be installed soon, to be followed by others as development progresses. The company is pleased with the fact that the cost per ton over long periods varies by only a fraction of a cent. Upkeep costs and interruptions are few.

In practically every coal-producing state scraper loaders are being tried and with a fair measure of success. That this type of loading device will not pass away is evidenced by the keen interest being taken in it everywhere. Its utility for loading and transporting coal without sacrificing simplicity and ruggedness and its comparatively low cost, has made many friends. If the practicability of the various forms of "V" layouts is eventually proved, the future will probably see many scrapers applied

Joy Shearing Machine

It is mounted on a caterpillar tread and is provided with demountable mine car wheels such as are used on the Joy Loader. It follows the undercutting machine from place to place. Shearing not only increases the percentage of lump but also boosts the daily tonnage of a mechanical loader by eliminating tight shots.



to this mining plan which provides an easy path for them in moving from the face to the mine car or conveyor.

In its Ehrenfeld No. 8 mine and its Arcadia No. 42 mine the Pennsylvania Coal & Coke Co. is using scrapers of 1,500-lb. capacity, equipped with 35-hp. motors, in a modified "V" layout. In the first mentioned mine the seam is 4 ft. thick and in the last it is less than 3 ft. At Ehrenfeld, where three bands of impurity occur in the seam, outside mechanical preparation is required. At Arcadia, where the impurity is confined to a small sheet of bone over the seam, the coal is satisfactorily prepared at the face. The entire output of these two mines, which totals 1,200 tons per day, is produced mechanically. The experience of this company with mechanical loading methods has been uninterrupted operation and a substantial increase in output per man.

In this company's mines trials of machines designed to pick up coal with flights, arms, bits, etc., have not been successful.

In most parts of the country the tendency is toward the use of large capacity scrapers in thick seams. In the No. 4 mine of the Union Pacific Coal Co., Rock Springs, Wyo., a 3-ton scraper, made by the company, is now in use and a 4-ton Goodman scraper will be installed soon in an adjoining mine. The scraper now in

use in coal from 6 to 9½ ft. thick is producing 200 to 270 tons per 8-hr. shift, with a crew of only six men who perform all the duties incident to the work of this machine. During its operation in 1925 this machine worked on a long, inclined face.

The new big Goodman scraper will be equipped with a 3-drum hoist propelled by a 125-hp. motor. This hoist will spool 800 ft. of ¾-in., 1,200 ft. of ¾-in. and 1,700 ft. of ¾-in. rope. In conjunction with this equipment four sections of conveyor mounted on mine car wheels are provided to carry the coal from the discharge point of the scraper to a trip of cars on a parallel entry. By this means it is believed the scraper will not have to be moved oftener than once in 10 days. The layout will employ a long straight face.

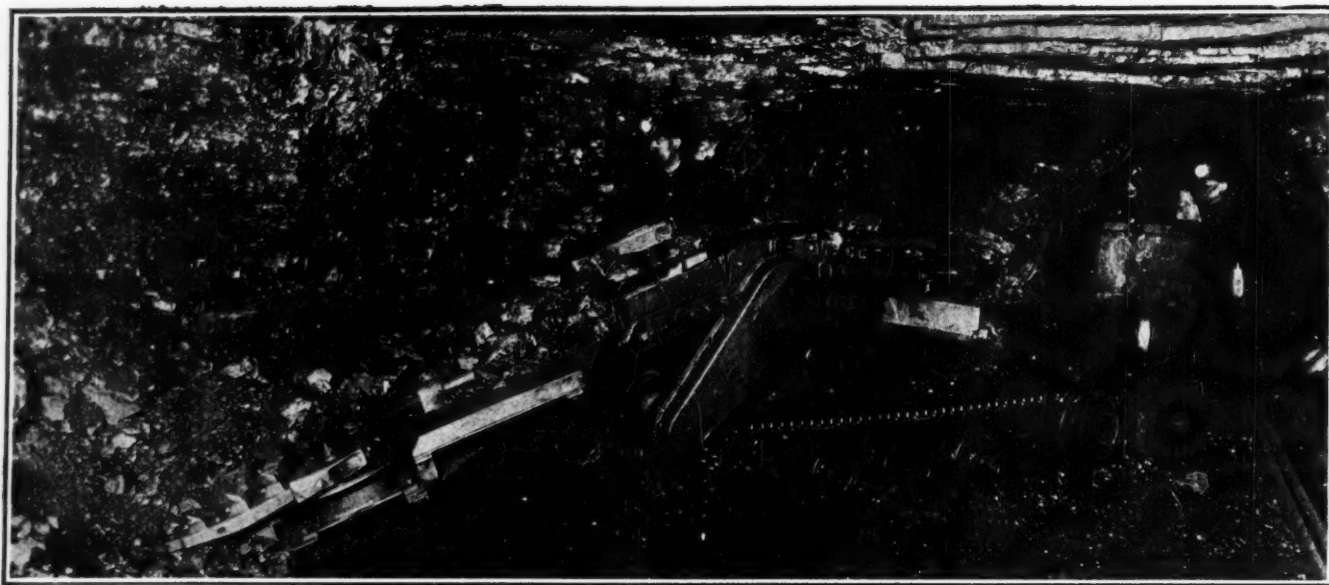
SCRAPER LOADED 450 TONS IN 8 HR.

One of the big scrapers introduced last year is the Ace which proved its high capacity while in operation in Mine A of the Pike County Coal Corp., Petersburg, Ind. It has loaded as much as 450 tons in 8 hr. over a period of many shifts in coal which ranges from 7 to 9 ft. in thickness and which has good roof and bottom. The bucket is 10 ft. long, 5 ft. wide and 32 in. high. It loads into a dumping platform extending over a haulway on which mine cars are spotted. This scraper is operated by a 125-hp. hoist which is capable of

dislodging standing coal and imparts running speeds to the bucket of 500 ft. per minute when running light and 350 ft. when loaded. The loading platform incorporates a storage basin under which is an apron conveyor extending to the tip of the mine-car loading boom.

The Jeffrey shortwall loader is applicable to room-and-pillar work as well as entry driving. In places 25 to 30 ft. wide it loads directly into a sectional conveyor but in wider places it discharges into an auxiliary face conveyor which joins with the sectional conveyor. It also is claimed to have application in long-wall work in which case it would load from an end-on position into a sectional conveyor, thus requiring no space between the latter and the face. In two mines where the entire output is loaded by these machines the average daily output per man, inside and outside, is 10 tons.

Another interesting mechanical loading operation which bore fruit last year, as reported by Dever C. Ashmead, anthracite mining engineer of the U. S. Bureau of Mines, is the Hoar shovel installation in the Pancoast colliery of the Price Pancoast Coal Co., in the anthracite field. In the operation of this colliery during the past year this shovel facilitated the reclamation of pillars in old workings by loading out rock, 1 to 8 ft. thick, in caved chambers. The cost of this method of clean-up as



Joy 5-BU Operating in One of the Mines in Which It Has Had Conspicuous Success

One of these machines in an operation of the Gay Coal & Coke Co., Logan County, W. Va., last year loaded 70,000 tons, double-shifting. In that time, states Harry S. Gay, Jr., general superintendent, the machine more than paid for itself.

compared with that of hand loading showed a saving of 35 per cent.

In the King mine of the Princeton Mining Co., near Princeton, Ind., two 4-BU Joys, two Jeffrey pit-car loaders and one Myers-Whaley loaded a combined average of 452 tons per day over a long period despite the fact that three of these machines were working in narrow places while only two were in operation in rooms. An Oldroyd loader was in operation there during the last half of the year but no record of its production was received.

The intense interest taken at the recent meeting of the Coal Mining Institute of America in the discussion of the highly successful use of the Myers-Whaley machine for cleaning up falls in back entries and for assisting in the brushing and taking of bottom indicates that this type will serve another specific purpose besides loading coal. One company in central Pennsylvania is operating six of these machines in this work in a low seam. The Lynch mines of the U. S. Coal & Coke Co., Lynch, Ky., are using two of these machines in the work of increasing the height of their entries. In rock work the Myers-Whaley is loading from 50 to 125 cars—1½ tons of coal capacity—in 8 hr.

The Jeffrey conveyor-loader belongs to the family of loading machines as well as to that of conveyors. As its name implies this device both loads and conveys coal and is applicable to long face work. Briefly, it is a flexible conveyor which rests flat on the bottom and is fed forward into loose coal by ratchet jacks. This

conveyor extends the entire length of the face, is only 28 in. wide and 17 in. high, for which reason it is suitable for low coal and timbers may be set close to the face. Flights hinged to the conveyor chain gather and convey the coal. This mechanism facilitates the taking of two cuts from a long face in one shift.

The O'Toole machine, which is 42 ft. long, is intended for long face work in which it loads as it cuts. During 1925 it produced 89,887 net tons of coal in an actual working time of 2,272 hr., an average of 39.5 tons per hour. On the performance of this machine during 1925 in one of the mines of the U. S. Coal & Coke Co. at Gary, W. Va., Colonel O'Toole reports: "The operation of the cutting and loading machine has been satisfactory and by its use we have increased the production per man 25 per cent. We consider this good inasmuch as the machine is experimental and we would have done better had we not been experimenting for the greater portion of the year with a new roof control machine."

NEW JOY DESIGN SUCCESSFUL

During the past year the Fordson Coal Co. operated one 5-BU Joy at its Kentenia operations in Kentucky. With regard to its performance L. C. Skeen, superintendent of these mines, has this to say:

"The 5-BU Joy loader has been in use here for the entire year of 1925 with the exception of the month of June when the machine was thoroughly overhauled and the new improvements of the later type added. Our experience with this machine

during the first six months of last year, before it was rebuilt and the new improvements added, involved one delay after another, due to mechanical trouble. Our records for this period show that the machine was down for repairs 23 per cent of the operating shifts. During the last five months of the year, after the design and construction of the machine had been revised, we lost only one shift due to mechanical trouble. Of course, short delays occurred due to burned out cables and things of that sort which cannot be blamed upon the machine. This experience leads us to the conclusion that the machine is now approaching the endurance of the ordinary cutting machine.

"During 1925, up to Dec. 23, this machine loaded 37,791 tons, despite the fact that it did not operate during July and was idle practically one-fourth of working time prior to that month. From January until June economies by the use of the Joy were negligible after depreciation was deducted; but during the last five months of operation it has effected a saving, over hand loading, of 13 per cent. In the accounting, to the total cost of operation is added a depreciation charge of 5½c. per ton. We also add an additional haulage charge to the cost when the loader fails to load as many tons as one gathering locomotive hauls on an average from hand loaders."

The Joy machine has been improved in a number of places. One of the improvements is a change of the gathering arms in size and shape, giving the machine increased capac-

ity and the arms greater strength. The latter are now made of manganese steel. The demountable track wheels are now cast solid, an improvement over the old type of wheels which were built up. Changes have been made in the caterpillar mechanism, which may add to the life of this part of the machine. A new control valve provided with renewable seats has been designed, which gives dependable hydraulic pressure for raising and lowering the gathering head and the rear conveyor. The hydraulic pump which supplies this pressure has been improved by the insertion of ball bearings.

A new type of Myers-Whaley for use in 4-ft. coal was introduced last year. This machine does not replace any of the other sizes. It is about 24 ft. long, 4½ ft. wide, stands 3½ ft. off the rail, has a reach of 8½ ft. and weighs 14,000 lb. Its capacity in loose material is about 34 cu.ft. per min.

Another of the new machines of the past year is the Stockly loader. It is one of the smallest and lowest of the machines thus far developed, is mounted on caterpillar treads and is distinctly different from other machines in that the front conveyor is a mat of interlocked endless drive

chains which also serves the purpose of driving a digger shaft at the nose of the machine. On this digger shaft are mounted 20 five-tooth sprockets which are provided with digging teeth. In loose coal it has a capacity of 2 to 3 tons per min.

Thus it is apparent that not only have mining men increased their knowledge of how to fit loaders into methods of mining but several manufacturers have been alert to their own opportunities and have equipped the industry with more effective loading machines for 1926. Machine loading is steadily advancing.

Gandy Shows What National Coal Association Has Been Doing During 1925

The 1925 activities of the National Coal Association outlined in a statement by Harry L. Gandy, executive secretary, show that the association rendered a good many services to the industry. His statement covers especially the period from June, when the association's year began following the annual meeting at Chicago.

The association's standing committees are: Executive, finance, foreign trade, government relations, membership, publicity, research, safety, tax and cost accounting, and transportation. And there is a special committee to develop a plan for the collection and dissemination of trade information. This list of committees gives a general index of the major lines of work. The committees are functioning through definite programs.

The National is, of course, closely concerned with the advisory committee of Secretary Hoover, of the Department of Commerce, in relation to the reorganization of the Bureau of Mines. On this committee the National is represented by J. G. Bradley. Recently, at the instance of the American Wholesale Coal Association, the National named a committee on trade relations, and this committee met in New York, Dec. 16, with members of the wholesale organization to consider several matters of mutual interest.

Other than attending many meetings of local associations, Mr. Gandy during the last few months has addressed important gatherings, which afforded excellent opportunities to broadcast the message of bituminous coal, namely, the annual meeting of the New York State Retail Coal Dealers' Association at Richfield

Springs, N. Y., the annual convention of the Purchasing Agents of the Institute of American Meat Packers, Chicago, and the meeting of the Executives of Industrial Associations at the annual convention of the National Association of Manufacturers, St. Louis.

Several conferences were held with the New England governor's fuel committee and co-operation was given also to the New York state coal commission, assisting in several educational programs for the burning of bituminous coal. The association purchased and distributed thousands of pamphlets, issued by the American Society of Mechanical Engineers and carrying directions for the use of this coal.

STUDIES STREAM POLLUTION

Recent activities of the association include a study of stream pollution. In order to obtain data on this important subject for the benefit of the entire industry, a representative of the National, in the company of an official of the Bureau of Mines, made an investigation in October of stream pollution in the Indian Creek District, Pennsylvania.

The association has several representatives on the sectional committees of the American Engineers' Standards Committee. These sectional committees are outlining recommendations for the industry. We are financing a research fellowship in the Carnegie Institute of Technology in the person of Russell B. Cooper, a graduate of Pennsylvania State College.

Activities of the government relations committee have been in full force for some period. The only

sound program, according to the National's experience, is one of absolute freedom from governmental interference. The attitude of the National, however, really is not arbitrary. The association is constantly studying with an open mind suggestions made by legislators, economists and others, in this and other countries, to determine if there is merit in proposed panaceas.

In order to inform fully the membership in respect to the editorial opinion of the country concerning the coal situation and also the trend of events in Washington, the association commenced on Oct. 13 a weekly series of government relations committee letters. These letters, to date, have carried thirteen symposia of editorial opinions, representing a review of more than 5,000 editorials, nearly 700 of which have been quoted, from about 500 different papers in 41 states. Our members, in not a few instances, acting on information obtained in these letters, have been successful in efforts to tone down or change for the better the policies of not a few consequential organs.

In order to keep the members completely in touch with the vital news of the industry, a bulletin is issued weekly or oftener which contains in brief and pointed paragraphs such information as we consider of outstanding value. It is largely through the medium of this bulletin that the National renders the membership a most important tax service in the form of digests of rulings of the federal tax commissioner and opinions of the solicitor of internal revenue and decisions of the U. S. Board of Tax Appeals and of the federal courts which concern operators of coal mines. Since June, the bulletin has carried more than 100 statements from the traffic bureau.

Coal Industry Battles for Bigger Business

Electrification Is Its Best Friend and Worst Enemy—Railroads Increase their Use of Electric Power — Anthracite Briquetting Grows — Fixation of Atmospheric Nitrogen Makes New Fuel Demand

IN THE LATTER PART of the past year the sale of coal was so active as to revive the drooping spirits of those who questioned what the future had in store for the coal industry. The country's call for coal is insistent and from a widening field of consumption.

The demands of the public utilities are growing so fast that the cut in coal consumption which their fuel economies made will be largely overcome by their own volume of business. For August of this year 16 per cent more energy was used than in the same month the year before, in September 14.8 per cent more and in October 14.7 per cent. At the beginning of 1917 the daily energy generated was a little less than 65,000,000 kw.-hr. and at the end of 1925 it had reached about 180,000,000 kw.-hr., an advance of nearly 170 per cent in nine years or a little less than 20 per cent per annum.

However, one might draw more comfort from this fact than the actual conditions justify, because some of this business has been obtained by the dismantling of uneconomical isolated power plants that used to be large consumers of coal. Economies in central-station practice

and economies due to the purchase of power from central stations are making dubious any attempt to get comfort from the growth of energy output from such plants, especially, as many of them are getting their coal from mines which they own or control. The increase in the demand for central-station power does, however, develop the demand for coal of small size and so decreases the necessity for careful handling of coal in mining and preparation.

USE OF ELECTRICITY GROWS

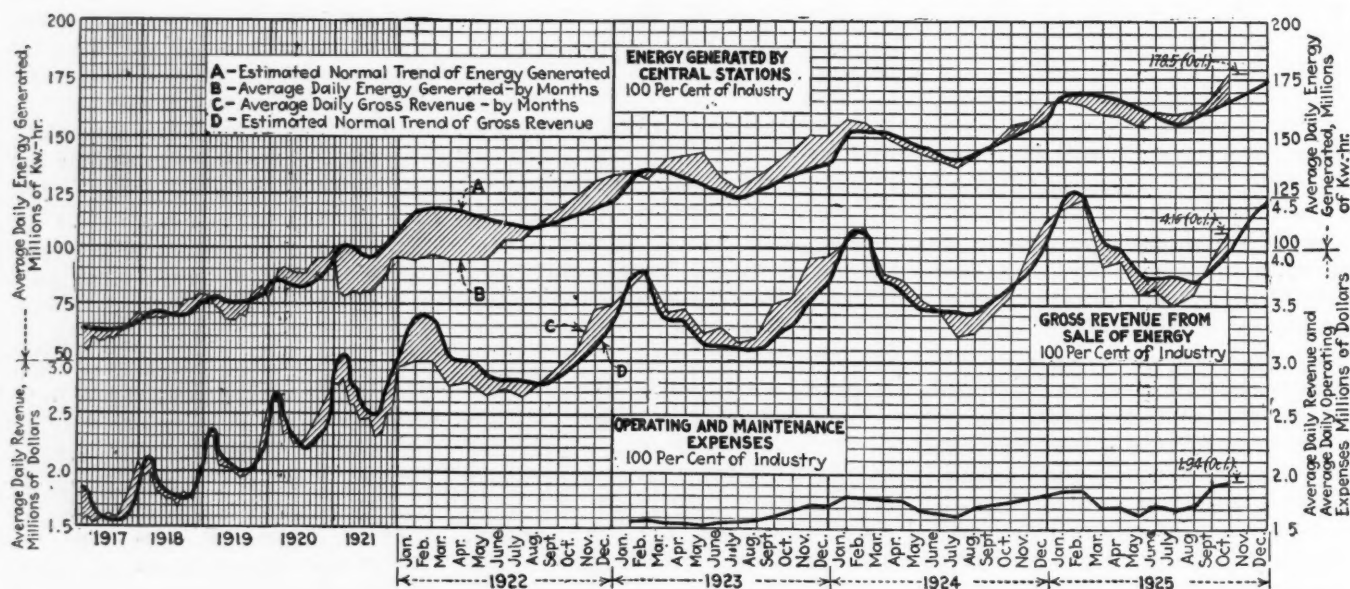
It must not be forgotten, however, that 14,533,000 houses occupied by 63 million persons or 54 per cent of the population in the United States are supplied with electricity and all those who are using it in any form are disposed to increase that use from year to year. Illumination steadily grows more general, because of the safety, cheeriness and helpfulness of good light. It reduces accidents, it improves morale, and it makes many difficult operations easy. It also lessens eye strain.

The degree to which better lighting may be carried is hard to predict. The public slowly breaks away from parsimonious practices based on

years of education in economy obtained when light was more expensive and less convenient. But the movement for better light is under way and at the same time is coming the refrigeration of buildings with relief from much of the misery accompanying existence in an atmosphere overburdened with moisture and in a temperature too near the blood heat. With that consummation an enlarged market for coal will be inevitable.

Coal has gradually been ousting oil in the production of steam for power purposes, though the anthracite strike put a crimp in this movement wherever anthracite fines were being used. However, the cream of the anthracite is in prepared sizes, and here unfortunately oil has made rapid strides in dispossessing coal since the strike started because of the uncertainty of anthracite supply and because of the ease with which oil can be burned.

A new cloud has arisen on the horizon, the Diesel electric locomotive, a unit deriving its primary power from liquid fuel of any kind and driving a motor which in turn drives the locomotive. This may be used only for switching purposes in



Courtesy, Electrical World

With This Graph the Steady Progress of the Central-Station Business Can Be Traced

The average daily revenue has progressed from about \$1,800,000 in the beginning of 1917 to about \$4,500,000 at the end of 1925, and the energy generated daily from about 65,000,000 kw.-hr. to 175,000,000 in the same length of time. The operating and maintenance expenses that were in January, 1923, about \$1,600,000, were in Oct., 1925, a little over \$1,900,000 daily. The growth

of this industry, though attained partly as the result of absorbing the functions of the wasteful isolated station is one of the most hopeful answers to the question "Where will we find a place to put the increasing flood of coal?" "Cooling with coal" will draw up the summer sags in the gross revenue curve and make it look like a railroad grade.

large cities where its smokelessness is in its favor, but it seems not unlikely that it may have a wider range of usefulness and be applied to main-line and branch line service, in which case it may reduce the railroad use of coal in an even larger degree.

As a result of the successful demonstration of one of these units, six roads will soon have similar locomotives in service. These roads are the Baltimore & Ohio, the Lehigh Valley, the Delaware, Lackawanna and Western, the Erie, the Chicago and Northern, and the Central of New Jersey. In addition, the Long Island is using a 100-ton unit which has power equipment consisting of two 300-hp. engines and generators with somewhat larger motors. Marked reductions in operating costs are considered possible by the much lower cost of fuel and the elimination of standby losses which are unavoidable with the steam locomotive.

NEW MOTOR CAR

The gas-electric motor car is another development. It is said to be particularly well adapted to light-traffic branch lines where the volume of business is not sufficient to justify the high operating costs incurred with steam locomotives. Performance data on a number of roads indicate that the cost per mile of operation is as low as 40c. or less per train-mile, as compared with \$1 to \$1.75 for a steam train and crew.

About 50 of these cars have now been built and more than half of them have been in daily service for a sufficient period to give accurate data on operating costs.

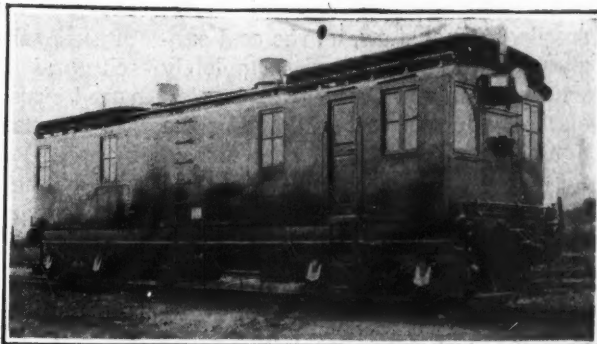
In the application of the oil engine to the propulsion of electrically driven motor cars, the Canadian National Ry. practically completed in 1925 seven single cars each approximately 60 ft. in length, equipped with a 185-hp., 700-r.p.m., oil engine direct connected to a 600-volt, direct-current generator.

A remarkable demonstration recently was made by one of these cars traveling from Montreal to Vancouver in three days. Not only were all records broken, as to actual schedule, but the car was credited with making the longest non-stop run ever made by any engine. The route of 2,937 miles was covered in an actual running time of slightly under 67 hr. with an average speed of 43½ m.p.h. During this time the oil engine was running continuously.

Another installation using the

New Oil-Electric Locomotive

Engines like this 100-ton type resemble in their flexibility the storage-battery locomotives of the coal mines and are receiving much attention from the railroads. They are a new and dangerous invasion of the coal market, for they burn inferior oils.



same principle is being made by the New York Central R.R. using a 200-hp. oil engine direct connected to an electric generator.

Progress has been made during the past year in the electrification of railroads, and the advance promises a reduced use of coal due to the economies which accompany operation by electricity. The Staten Island Rapid Transit Ry., a part of the Baltimore & Ohio R.R., has been electrified from St. George to Tottenville, South Beach and Port Ivory, a distance of 21.6 route miles making 50 miles of actual trackage. The Long Island R.R. has been electrified during the past year from Jamaica to Babylon, a distance of 28 route miles. An extension of the Long Island electrification system to Mineola and over the Oyster Bay and Hicksville branches is projected.

VIRGINIAN RY. ELECTRIFIES

The Virginian Ry. during the past year completed 14 miles of electrification from Elmore to Clark's Gap and eventually it is to be electrically operated from Roanoke to Mullens. The New York, New Haven & Hartford R.R. finished the electrification of 24 miles with 31 miles of track in 1925 and the Norfolk & Western Ry. completed an extension of its electrification system over a distance of 20 miles between Farm and Iaeger. The Detroit, Toledo & Ironton R.R. began the electrification of 15 miles between Flat Rock and Detroit (Fordson). This, of course, is part of a much larger scheme.

The Great Northern Ry. is working on a 24-mile section, and the Illinois Central R.R. has projected for the present year the electrification of 37.4 miles with 122 miles of track all within 28 miles of the Chicago terminal. Under the Kaufman Act all railroads entering New York must be electrified within the city limits. The Pennsylvania R.R. is considering the extension of its electrification so as to make possible

the operation of electric trains between Philadelphia and Wilmington, Del. During 1925 the electric street railways system increased in length by 236 miles.

So many have been the savings which electricity has made possible in all the industrial enterprises that purchase coal that the coal operator will do ill if he does not continue to seek similar savings by the entire electrification of all his operations.

The mercury boiler that has promised efficiencies greater than can be obtained by the use of the steam boiler and that has given such excellent results at Hartford, Conn. is being improved by W. L. R. Emmett, the inventor. To facilitate cleaning and inspection the boiler will now be built in sections. Designs have been prepared for units of 9,000-kw. capacity in the mercury turbine and 12,000-kw. in the steam unit. With the 70-per cent efficiency which is anticipated and with 70-lb. gage pressure for the mercury vapor a kilowatt-hour should be delivered to the switchboard on 10,000 B.t.u. or a little less than the number of heat units in a pound of somewhat inferior fuel.

PULVERIZED COAL UP FRONT

Pulverized coal continues to make progress. River anthracite is being used at the Holtwood station of the Pennsylvania Water & Power Co., and the same concern is contracting for the erection of another installation at its Pine Grove station. During the year important installations have been made at the Bruno Island Plant, of the Duquesne Light Co., the Columbia power station of the Columbia Power Co. and the Gould Street station of the Consolidated Electric Light & Power Co., of Baltimore. Some coal operators look with anticipation to the further introduction of pulverized coal systems as they make possible the use of clinkering coal and coal of inferior quality. When coal is used for non-metalurgical purposes the disadvantage of

ash in the coal is brought to its smallest dimensions, as the coal substance can be burned completely without loss and the drawbacks consist only in the cost of hauling the non-combustible, pulverizing it and taking away the ash.

During the year the estimated production of pig iron in the United States reached 36,750,000 gross tons which was almost as great as in 1920 when the output was 36,926,000 gross tons. Steel, however, showed a bigger output than in 1920 and in 1923—both big years. In 1925, 45,250,000 gross tons of steel were produced. These facts have much to do with the strong market in the close of the past year, for it must be remembered that the production of iron and steel is an index of activity of the industries which make use of it.

MINE MAKES ONLY LARGE SIZES

In the course of the year the St. Clair Coal Co., which has a mine near Minersville, Pa., put in operation a briquetting plant and it intends to supply a product for the domestic market. It will take sizes above buckwheat from the coal as it passes through the breaker and will treat the finer sizes so that they will be saleable for domestic use.

The briquets which are made by the Mashek Engineering Co.'s method with sulphite pitch and as-

phaltum are known in the trade as Super-Anthracite and are said to be selling at prices above those of prepared sizes. The coal is cleaned by the Chance process. Because the briquets neither clinker nor smoke and because they burn more completely than true anthracite, hold fire more readily and require less air, because of better distribution, they sell at better prices than the natural coal. The capacity of the St. Clair plant is about 22½ gross tons per hour.

ANTHRACITE BRIQUETTING ACTIVE

The activity in briquetting has been largely in the preparation of anthracite. Thus the Anthracite Fuel Corp., of Baltimore, Md., has erected a briquet plant of 15 gross tons per hour; the Philadelphia & Reading Coal & Iron Co., one of 7 gross tons at Schuylkill Haven; the Grasselli Chemical Co., one of the same size briquetting iron ore and coal. The Mines Department of Canada is to build one of 7 tons per hour capacity, the location of which is not yet announced. All these are briquet plants of the Mashek type.

Another expanding use for coal in this country is in the manufacture of ammonia. Lazote, Inc., one of the du Pont industries, is completing a plant at Belle, W. Va., (about 12 miles from Charleston) for nitrogen

fixation, using bituminous coal as a source of power and raw material. The first unit of the plant is designed to turn out 25 tons per day of pure anhydrous ammonia. The French Claude process will be used, the nitrogen of course, being taken from the air. Steam will be blown over red-hot coal or coke to form water gas. This will be purified, and the hydrogen taken out by a liquification process. A portion of this hydrogen will then be burned with a definite quantity of air leaving the free nitrogen.

The nitrogen so obtained is mixed with the correct proportion of hydrogen. The mixture is then compressed to an extremely high pressure and exposed to the action of a catalyzer forming ammonia. The carbon monoxide which is taken from the water gas in the process of isolating the hydrogen is burned under the boilers in conjunction with coal. It is rumored that if the first unit of the plant is as successful as expected, three additional units will be constructed in the near future.

Thus the uses of coal are constantly widening and former industrial demand is strongly maintained by vast business activity throughout the land in spite of new economies that are accomplished in fuel consumption and despite the inroads of substitutes.

Coal Produced in Montana, New Mexico and Oklahoma in 1924^a

(Exclusive of product of wagon mines)

State and County	Net Tons				Total Quantity	Value		Number of Employees			Average Number of Days Worked	Average Tons per Man per Day	
	Loaded at Mines for Shipment	Sold to Local Trade and Used By Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines		Total	Average per Ton	Underground—All					
								Miners ^b	Others	Surface			
Montana:													
Carbon.....	987,939	43,790	57,485	.....	1,089,214	\$3,742,000	\$3.44	733	338	225	1,296	175	4.80
Cascade.....	499,836	28,938	9,865	.....	538,639	1,417,000	2.63	447	165	119	731	150	4.90
Fergus.....	.....	3,800	.....	.....	3,800	15,000	3.95	4	3	3	10	187	2.03
Musselshell.....	946,847	14,890	13,944	.....	975,681	2,586,000	2.65	550	278	111	939	177	5.88
Richland.....	18,618	10,806	.....	.....	29,424	113,000	3.84	24	20	7	51	229	2.52
Sheridan.....	300	11,659	.....	.....	11,959	28,000	2.34	18	2	2	22	178	3.05
Other counties ^c	197,296	56,707	2,645	.....	256,648	695,000	2.71	76	17	54	147	219	7.98
Total.....	2,650,836	170,590	83,939	.....	2,905,365	8,596,000	2.96	1,852	823	521	3,196	173	5.26
New Mexico:													
Colfax.....	1,478,975	15,666	13,758	136,212	1,644,611	5,480,000	3.33	1,223	486	661	2,370	190	5.66
McKinley.....	844,377	20,869	24,581	.....	889,827	3,241,000	3.64	868	265	174	1,307	214	3.18
Rio Arriba.....	31,020	42	600	.....	31,662	95,000	3.00	29	7	9	45	238	2.96
San Juan.....	.....	4,414	.....	.....	4,414	9,000	2.04	6	1	.....	7	224	2.81
Other counties ^d	195,066	8,010	12,473	.....	215,549	949,000	4.40	290	92	95	477	241	1.87
Total.....	2,549,438	49,001	51,412	136,212	2,786,063	9,774,000	3.51	2,416	851	939	4,206	204	3.25
Oklahoma:													
Coal.....	27,011	1,340	898	.....	29,249	\$136,000	\$4.65	72	33	28	133	96	2.28
Haskell.....	67,426	1,876	3,545	.....	72,847	364,000	5.00	25	8	92	125	151	3.86
Latimer.....	238,739	1,363	13,922	.....	254,024	945,000	3.72	477	206	120	803	138	2.29
LeFlore.....	145,157	12,991	4,991	.....	163,139	652,000	4.00	354	169	93	616	96	2.77
Okmulgee.....	814,380	752	3,551	.....	818,683	2,514,000	3.07	1,032	379	186	1,597	118	4.34
Pittsburgh.....	683,290	4,732	29,772	.....	717,794	3,061,000	4.26	1,337	936	286	2,559	122	2.31
Tulsa.....	166,217	10,759	.....	.....	176,976	611,000	3.45	26	8	146	180	222	4.44
Other counties ^e	94,717	2,186	.....	.....	96,903	307,000	3.17	1	1	129	131	174	4.25
Total.....	2,236,937	35,999	56,679	.....	2,329,615	8,590,000	3.69	3,324	1,740	1,080	6,144	124	3.85

^a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active mines of commercial size in Montana was 48 in 1923 and 68 in 1924; in New Mexico, 42 in 1923 and in 1924; in Oklahoma, 115 in 1923 and 94 in 1924.

^b Includes also loaders and shotfirers.

^c Blaine, Chouteau, Custer, Dawson, Gallatin, Hill, Judith Basin, Pondera, Rosebud, Toole and Wibaux.

^d Lincoln, Sandoval, Santa Fe and Socorro.

^e Includes Craig, Muskogee, Rogers and Wagner.

Statistics issued by U. S. Bureau of Mines.

Anthracite Operators by Management Cut Costs While Seeking Labor's Aid in So Doing

By H. S. Gilbertson*

Approved by

S. D. Warriner

Chairman of the Anthracite Operators' Conference

THAT THE ANTHRACITE industry is not in the "hard-boiled monopoly" class has been made clear to those who are willing to read the signs, in the comparative complacency with which the public has accepted the recent strike, and satisfied its wants with low-volatile bituminous coal, coke and oil. Long before the strike, competition made itself unmistakably and increasingly felt as the prices of anthracite were forced to higher levels. Many of those who would like to have burned anthracite burned substitutes, just as many of those who would like to have driven Pierce Arrows have contented themselves with Fords.

Competition forced down prevailing prices of the domestic sizes at the mines, so that even after the beginning of the 1925 strike, they were from 10 to 30c. lower than in September, 1924. From which it is evident that by no such monopoly formula as "cost-plus" may the industry "help itself" to "enormous profits."

What the public has completely overlooked is the sharp drop since the period immediately following the war in prices of steam sizes, which always have sold at less than the cost of production and comprise from 20 to 50 per cent of the output of the various companies.

CONSIDERS MANAGEMENT

Thus has a severe pressure been applied on margins of profits from the revenue side. And from what follows it should also be clear that rather than following, or seeking to follow, the path of wage reductions, *the industry has put the first and chief burden of adjustment upon management.*

From the cost direction comes a pressure from countless sources which can only be appreciated by those who are actually in the production end of the business.

To a large extent the future cost problem inheres in the very nature of the physical conditions of mining. Taken as a whole the industry is in

the stage of second mining; in many cases third mining. Many years ago, with the application of the comparatively crude mining methods then in vogue, the cream was skimmed off, leaving for the present and future generation the thinner seams and old workings which require a larger amount of timbering, yield a larger percentage of the poorer sizes and necessitate a more thorough treatment in the breakers, and the disposal of a larger amount of refuse.

CONSERVING RESOURCES

To face these conditions squarely and make the best of them is as much in the interest of the public as of the owners. It is conservation of natural resources. The percentage of recovery in mines which, thirty or forty years ago were considered completely worked out has been increased from an original of less than 40 per cent to as high, today, as 70 per cent. Reflecting these increasing mining difficulties, and possibly other factors, the daily output of the men at the face has decreased, according to data compiled for this magazine, from an average of 7.5 tons in 1877 to 4.0 tons in 1922. During the last 25 years the wage rates of all mine workers has steadily mounted.

The alternative to remining is to tap the lower levels, which involves increasingly greater drainage, ventilation and timber costs. This entrance into new territory also, of course, involves heavy charges for the sinking of new shafts and driving new tunnels.

Thus, the anthracite management problem is a two sided one, with the public on one side insisting on lower prices for its fuel, and labor, which constitutes 70 to 75 per cent of f.o.b. mine cost, with labor on the opposing side insisting upon a stable or even an increased wage rate. That the industry is attempting to meet this double pressure with due consideration for, and, if possible, actual accommodation to the desires of both the public and labor, should be evident from a recital of recent accomplishments.

It may seem paradoxical that the industry is undertaking to increase revenues, and at the same time reduce prices. The explanation, however, is simple, when one realizes the enormous spread between prices obtainable for a product the units of which at all times are substantially the same in heat and cleanliness values and differ only in the size. If, with the same total tonnage an increasingly larger proportion can be moved up from the low-revenue to the higher revenue classes, the desired results will be obtained.

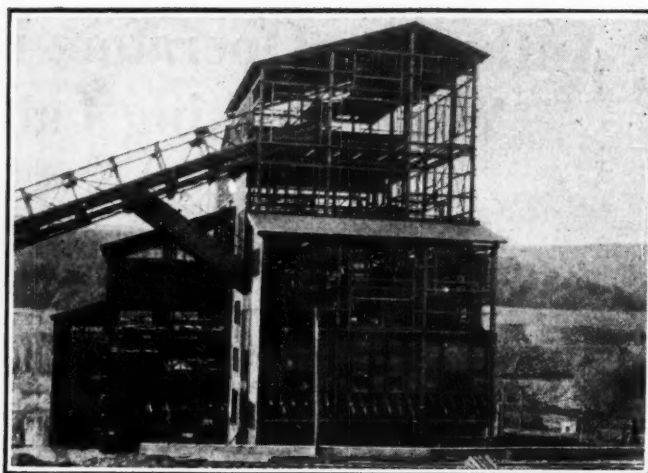
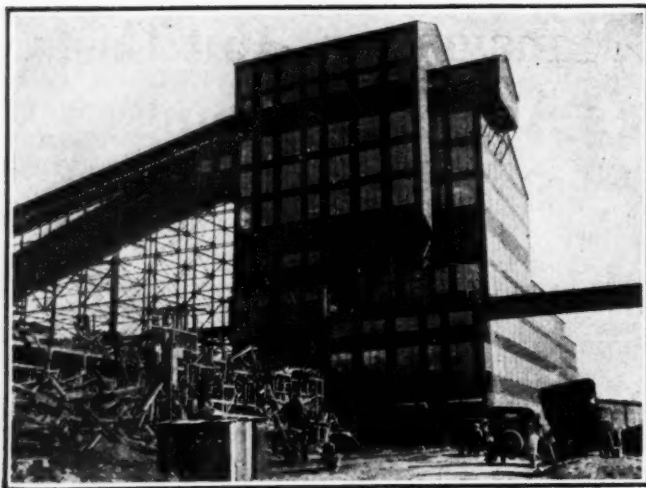
Effort begins at the working face. Experiments have proven beyond a doubt that with the better placing of shots a smaller amount of explosive power can be utilized to bring down an equal tonnage, but a tonnage richer in prepared sizes. Some of the coal companies, with the very able assistance of the powder manufacturers are making extensive scientific tests along this line, with encouraging results.

NOT SUITED FOR MACHINES

In some portions of the anthracite field, where the veins are practically horizontal, undercutting machines are used, eliminating in part the need for powder and increasing the percentage of larger sizes. In some few instances also mechanical conveyors from the face to the gangway are employed to prevent breakage. Unfortunately, however, these devices are not available in a large portion of the anthracite field because of the pitch of the veins. Through the introduction of such mechanical devices as rotary dumps, spiral chutes and mechanical systems of loading into railroad cars the campaign for bigger sizes goes on at the loading point in the mine, at the breaker dump and through the breaker to the railroad cars.

Turn now to the other end of the business, and we find the anthracite industry attacking the problem of fine sizes from the sales point of view. It took the better part of a century for the public to come around

*Director of Personnel, Lehigh Coal & Navigation Co., Lansford, Pa.



These Two New Breakers Indicate a Trend Toward Modernization in Anthracite

More than 10,000 tons of material can be handled in a day in the new colliery shown at the left. Towering more than 200 ft. above the ground level this breaker of the Lehigh Coal & Navigation Co., at Lansford, is a giant in size and capacity. The only steam used around here is for heating, all equipment is electrically

operated. The wood piled in the left foreground marks the spot where the former colliery stood. The new breaker being built by the Repplyer Coal Co. and shown at the right is in the lower anthracite region. By using the most modern equipment available and eliminating wastes, operating costs can be reduced.

to the practice of using, domestically, anything smaller than chestnut. Everything smaller went out to the culm banks. Even of later years the acceptance of the smaller sizes has been a matter of extremely slow growth. Under the pressure of high costs and public demand for lower prices, the industry has found it imperative to stimulate their use. To this end the operators established, in 1924, the Anthracite Coal Service, a co-operative agency to educate the public in the fact that economies can be effected without loss of service by utilizing the buckwheat sizes.

BIG SAVINGS MADE

In the first ten months of 1924 this service estimates that it has saved to the anthracite industry a tonnage of 803,444. Individual companies have rendered a similar service to the small users, particularly in large centers near the source of production. Their demonstrators go to the schools and churches and to private homes and give instruction in the economical use of No. 1 Buckwheat.

The gradual increase in the use of the small sizes has justified and encouraged much better preparation, and should result in even better sales results as time goes on. Modern jigs and concentrator tables have been installed in most of the modern breakers. New processes have made it possible to put on the market a cleaner No. 4 buckwheat product suitable for industrial uses.

In the direction of general cost reduction many changes have been effected both in the inside and outside operations, designed to eliminate labor and to speed up the movement

of the coal. Electric haulage, including the use of storage battery locomotives, has been rapidly displacing other forms of transportation. The size of rails has been increased and steel and roller bearing mine cars are replacing the wooden ones; automatic doors are replacing door tenders, and shaker conveyors are in many instances replacing coal pushing. Mechanical loading, in a number of mines is displacing a disagreeable form of manual labor.

In the outside operations anthracite progress is visible in the replacement of many old wooden breakers by those of steel construction. In a number of instances a consolidation of breakers has resulted in substantial reduction in labor force. Another outstanding achievement is the automatic remote control of fans and pumps, which in all cases eliminates attendants. General electrification of the operations appears to be the ultimate goal of all the progressive companies which are in a position to undertake the initial expenditure.

Reduction in cost is frequently tempered by considerations of safety. High power electric fans furnish enormously increased volumes of air at the working face. Electric firing batteries have been extensively installed in gaseous mines, and permissible explosives (at the expense of prepared sizes), have been generally adopted as a substitute for the slower but more dangerous black powder. First aid work has been stimulated by the U. S. Bureau of Mines and heartily supported by the coal companies and the men. While the introduction of safety devices

and measures occasion an apparently unproductive outlay, it has its economy reward in a substantial decrease in fatal accidents per million man days and in tons produced per fatality.

INDUSTRY IS PLANNING

It is often said in disparagement of business organizations that they seldom have within themselves the capacity for developing improved methods and procedure and that the main impetus for improvement comes from outside agencies which have something to sell. While it is true that very many of the changes, particularly in the mechanical field which have been utilized to advance the anthracite industry, have come from manufacturers of supplies and equipment, it is also true that *the industry itself is doing much thinking and planning. At least one large company has a well organized and effective research department.* At the present time it is conducting detailed studies of outside labor forces, inside transportation control, cleaning and closing gates on railroad cars, treatment of mine timber, analysis of clerical functions at the several collieries, excessive overtime, and several automatic devices at various points in the operations.

Important and promising as are the efforts of the companies in the direction of greater mechanical efficiency, sales service, and elimination of abuses in taxation, all these matters sink into insignificance in comparison to the human factor. It is not a question of "taking it out of labor," but rather of promoting an enlightened and farseeing attitude of

self-interest on the part of labor. The committee of prominent engineers and economists who addressed the operators' and miners' negotiating committee were right: the vital problems of the industry can and should be solved by a joint effort of management and men. In the case of the high-cost, low-realization companies the only alternative may prove to be ruin for both parties. The plain economic facts of the industry cannot continue to be ignored.

The human problem in the mines is, of course, as complex as human nature. It cannot be analyzed here. From an operating standpoint the important aspect of it is not so much wages as it is discipline. Discipline in the anthracite mines, whatever may be the cause, is frankly unsatisfactory at all times. The periodical strikes by which the public is reminded of the industry are but an acute manifestation of daily operating conditions concerning which the outside public hears little.

WORKERS ARE ANTAGONISTIC

No doubt the ultimate cause of much of this condition lies in the inability of operators and managers to strike a proper note in dealing with their men. No doubt serious mistakes were made many years ago by those in charge of the mines, and the memory of those mistakes is still potent. On the other hand there is no doubt that the advent of unionism in the form known to the anthracite industry has contributed largely to the difficulties. It is a part of the permanent, underlying conscious strategy of the United Mine Workers to create not only a diversion of loyalty from but a positive, active antagonism toward, the employer.

Aside from this more or less peculiarly anthracite phenomenon there are certain tenets of unionism generally that militate against changes that even remotely affect the so-called rights of the workers. In the old inefficient days prior to 1900 when the mines were under an unsatisfactory system of supervision, a form of workers' independence grew up that in many ways was of immediate or seeming advantage to the individual. According to the philosophy of the union, rights thus acquired through long usage may not be taken away except by agreement. This doctrine, in fact, is deeply embedded in the award of the Anthracite Strike Commission of 1902 and in subsequent agreements.

The principle is not without much sound justification: genuine rights which are really and ultimately beneficial to the workers should not be arbitrarily taken away, nor should they be bargained away lightly. The real complaint of the operators is that it is so often extremely difficult to strike a bargain on such matters even when the terms are extremely generous. For instance, there are many mines in the anthracite region where there is no checking of workers' time, for the simple reason that such a system was not in effect in 1902. The workers have a vested right in inefficient accounting!

Nor can there be any doubt that under union methods there has been a definite restriction of output at a number of points. This is most clearly shown in the short day worked by most of the miners in parts of the field. Whereas, the present agreement bases compensation upon a full 8-hr. day at the working place, compliance with this provision, on the part of contract miners, is the exception rather than the rule. (The last investigation of the U. S. Department of Labor shows an average of 6.3 hr.) Threats and fines have been imposed in numerous instances upon individuals who did nothing more than produce the daily output which they were fully capable and willing to produce.

It is true that a reversal of these policies and particularly greater productivity and amenability to discipline would bring results of immeasurable value not only to the operators and to the public but in equal measure to the workers themselves.

SOLUTION IS DIFFICULT

To state the labor problem is simple. To formulate, much less to effect, a solution is by all odds the most difficult undertaking in anthracite operation. What seems to be required on the part of everyone concerned is a more complete understanding. This may sound like the threadbare, cant phrase that crops out so often in industrial discussions, but the thought in mind is something definite, as exemplified by the program of one of the companies.

This company, which probably faces more than the average mining and commercial difficulties, has chosen to lay the facts of its situation with complete frankness before its supervisory forces, the mining community and the rank and file of the

workers. It has broadcasted the facts concerning its profits and losses, its costs, its margins. It has pointed out, not in general terms, but in specific detail, the common interest of all in preserving a satisfactory market.

Building upon this basis of better confidence and understanding, the company in question is also taking definite measures to tap hitherto undeveloped resources among the operating executives. More specifically, it is undertaking to take hold of the "practical" men of the organization, those who are right next to the big problems of industry, and bring them into contact with the larger aspects of the business.

CONFERENCES PROVE SUCCESSFUL

The particular procedure employed is the "foreman conference" which, by the way, is designed more especially for the assistant foreman than for his chief. Twice each month these operating men meet, discuss and report upon assigned problems of operation, costs, safety, organization, the handling of men, etc. The results of this effort have far exceeded expectations and, in addition to making available to the whole organization much valuable information and experience, are in a new but very real sense taking these important keymen into the management.

It is through such constructive means that the industry may hope to solve both revenue and cost problems without recourse to what, in some industries, is the easy but, in the long run, unsatisfactory route of wage reductions—*provided*, organized labor can be persuaded to use its imagination and become a party to that program of joint effort which the committee of economists and engineers suggested.

Organized labor, in this industry, as in others, does well to take a vigorous and determined stand against ruthless levelling of wage scales and living standards. In doing so it promotes its own interest but also performs a service of inestimable importance to the whole economic community. The first responsibility for any adjustments to meet price conditions undoubtedly rests upon capital and management. But these factors cannot bear the whole burden. For labor to fail in making its contribution to efficiency or, if necessary, to refuse to make some temporary sacrifice in compensation standards is suicidal.

Strike Dominated Anthracite History of 1925

No Public Clamor for Hard Coal Rose Because Consumers Stocked Up Heavily in Advance and Accepted Well-Organized Plan for "Substitutes"

THE STRIKE, which started on Sept. 1, 1925, and still continues with no signs of an early approach to a settlement, is the overshadowing feature of anthracite history for 1925. Inaugurated as a demand for increased wages and improved working conditions, the struggle has developed into a bitter fight over the question of arbitration as a road to permanent peace in the industry. The situation has been further complicated by proposals for legislative action at Washington and the intervention of Governor Pinchot of Pennsylvania, who is now trying to induce the state legislature to declare the industry a public utility.

The demands of the mine workers were formulated at the tri-district convention of the anthracite districts of the United Mine Workers, held at Scranton, Pa., the week ending July, 4, 1925. The report of the scale committee made the following demands:

(1) A two-year contract terminating Aug. 31, 1927, with full union recognition, including the check-off.

(2) A ten per cent increase to contract workers, an increase of \$1 per day to day men and the restoration of differentials existing prior to the award of the Anthracite Coal Commission in 1920.

(3) Uniformity and equalization in day rates, consideration rates equal to contract miners' earnings, and the payment of the "standard" recognized rates in the region to skilled mechanics.

(4) Payment for coal on a gross tonnage basis, establishment of permissible percentages of refuse and abolition of existing system of dock-ages and penalties.

(5) Payment for props, forepoling, etc., free jackhammers and air and free electric lamps and batteries.

(6) Minimum rates of 20c. per inch for refuse in all kinds of mining up to 10 ft. wide and 30c. for blasting top and bottom rock.

(7) Crediting of all cars at working place, continuous employment for maintenance men, five-day week, seniority rules, more prompt adjustment of grievances.

Joint conferences between the

miners' committee, headed by John L. Lewis, international president of the United Mine Workers, and the operators' negotiating committee, William W. Inglis, chairman, began at the Hotel Traymore, Atlantic City, N. J., July 9. Following the formal presentation of the demands, S. D.

THE COST OF STRIKES

From Sept. 1 to Dec. 31, 1925, striking anthracite miners sacrificed over \$100,000,000 in wages, the operators lost the sale of approximately 23,500,000 gross tons of coal and the business interests of the anthracite region untold millions. Production to Sept. 1, when the strike began, was estimated at 55,000,000 gross tons, as compared with 78,506,127 tons for the full calendar year preceding. Worse still, the industry faces the permanent loss of a share of its markets to other fuels.

Warriner, chairman of the Anthracite Operators' Conference, in a public session, declared that the competitive situation was such that the industry could not stand further increases in the cost of production.

To assure the public that there would be no interruption in the flow of coal, he asked the miners to join with him in an agreement to continue work after Aug. 31, if no contract had been signed by that date and also suggested that subjects upon which the conferees were unable to agree be submitted to arbitration. This offer of arbitration, renewed several times during later conferences, was rejected by the miners.

LEWIS ENDS CONFERENCE

The conference was abruptly terminated by Mr. Lewis on Aug. 4 before the miners had completed the presentation of their case because the operators refused to agree to the wage increases. It was estimated that the granting of the demands would add 30 to 35 per cent to the cost of coal.

A last-minute effort, engineered by business interests of Scranton and Wilkes-Barre, to prevent the strike

failed. Disputes over the status of the maintenance men were ironed out a few hours before the suspension became effective and these men continued at work. Later during the strike some of the local unions started agitation for the calling out of these men, but their demand was ignored by district and international officers of the union.

GOVERNMENT STAYS OUT

From the outset the federal government at Washington adopted a hands-off policy. It has held to this policy consistently, although President Coolidge, in his message to Congress in December, urged a reconsideration of the recommendations of the United States Coal Commission and several bills have since been introduced to effect government intervention.

Governor Pinchot, whose settlement of the strike of 1923 occasioned widespread criticism, stepped into the picture at an early date. He invited representatives of the miners and the operators to discuss the situation with him, but made no public recommendations until Nov. 28. At a public meeting in Harrisburg on that date he proposed an eleven-point peace program, providing, among other things, a five-year contract, for a general investigation, price-fixing, a modified check-off, and arbitration to determine whether wages should be advanced.

MINERS FOR PINCHOT PLAN

The miners promptly accepted his plan as a basis of settlement and the operators promptly rejected it. In their rejection the producers made public the fact that a union emissary had come to them several days earlier and that they had submitted terms of settlement providing an immediate return to work at the old wages, and a five-year contract, subject to annual revision by a board of seven members, including three representatives of the public. Later a number of legislators from Luzerne County submitted a proposal along somewhat similar lines and the operators expressed a willingness to negotiate on the Luzerne basis.

Region business interests and the

mayors and burgesses of the anthracite belt again became active. The Governor invited the municipal officials to confer with him, but they refused to bind themselves to an indorsement of his plan. In the meantime, the Governor issued a call for a special session of the state legislature to meet Jan. 13, 1926, to consider, among other things, the enactment of legislation regulating the industry as a public utility and authorization to enter into interstate compacts with consuming states to control prices and distribution.

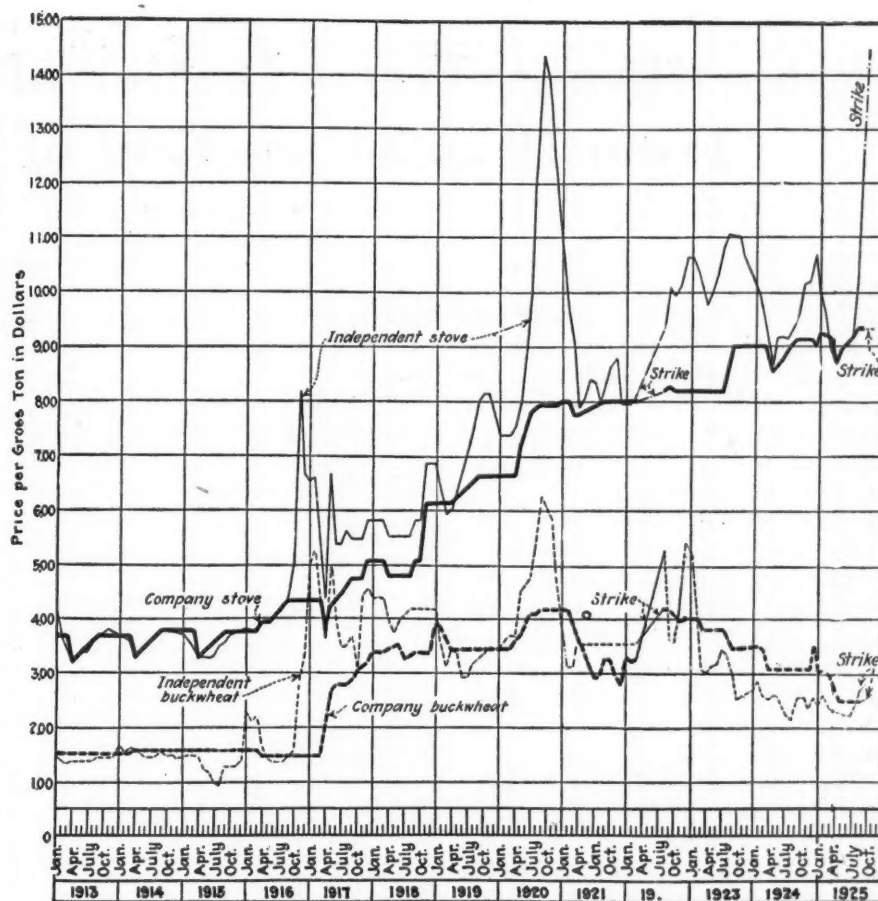
MARKLE SUBMITS PLAN

Christmas Eve, following the failure of a mayors' committee to effect a resumption of negotiations between operators and miners, Alvan Markle, chairman of the conference, issued a call for a meeting at the Union League Club, New York, on Dec. 29. At the opening session, he, too, submitted a plan, which was printed in full in *Coal Age*, Dec. 31, 1925. This plan also was rejected by the miners because of its arbitration features. Mr. Lewis and his associates again presented the Pinchot program and it was summarily dismissed by the operators. Later the miners incorporated many of its provisions in what they designated as a "revised Markle plan." The suggestion that the issues he left to Charles Evans Hughes was voted down by the miners.

On Jan. 11, Major Inglis, for the operators, offered a plan which he said represented the utmost that the producers could go in the way of concessions. This plan, rejected by the miners, called for a five-year contract at the old wages, subject to annual reconsideration by the Board of Conciliation. In the event of a deadlock in the Board, a board of three arbitrators would be named to decide the dispute. The next day the conference was again adjourned *sine die*.

DEMAND NOT URGENT

Unlike the course of events during previous strikes, there has been little clamor by the public for hard coal. This is due to two facts—heavy stocking in anticipation of the strike and a well-organized campaign to teach the consumer how to burn soft coal and coke. The Interstate Commerce Commission issued orders, establishing all-rail rates on prepared sizes from the West Virginia low-volatile fields. The scope of these orders was subsequently extended to



Anthracite Prices for Thirteen Years

This diagram shows in dollars per gross ton the average company circular prices and average spot quotations on "independent" stove and buckwheat sizes of Pennsylvania anthracite at the mines. Prices shown are averages of the range as quoted on the New York market.

cover shipments from the high-volatile districts and from Virginia to New England and the Middle Atlantic states. The West Virginia smokeless operators, encouraged by the New England Governors' Fuel Committee, opened demonstrating stations in Boston and other New England cities. New York City also established instruction centers.

Up to Dec. 31, it was estimated that the smokeless operators had shipped over 250,000 tons of prepared coal all-rail to the New England and Middle Atlantic States and the Kanawha district approximately 112,500 tons. Demand for coke has taxed the capacity of by-product ovens in the Northeast and the supply available from those sources has been supplemented by erratic shipments from the Connellsville region and some lots from ovens as far distant as Alabama.

In addition to these sources of supply, communities accessible to the seaboard have turned to foreign countries. Coke and coal have been imported from Germany and Scotland, anthracite from Wales, Scotland and Germany and bituminous from the British Isles and Canada.

Figures for the eleven months ended Nov. 30, 1925, compared with the corresponding period in 1924, show an increase of 67,233 gross tons in the imports of anthracite coal, 137,636 tons of bituminous and 56,088 tons of coke. In the three months beginning Sept. 1, 1925, compared with the corresponding period in 1924, anthracite imports increased 74,025 gross tons; bituminous coal 96,172 tons and coke, 30,245 gross tons.

BETTER MERCHANDISING

The year just closed witnessed considerable expansion in the program of better merchandising for anthracite coal. The industry adopted uniform standard sizing requirements which give the retailer and consumer opportunity to check on the preparation. The engineering service of the producers has been further extended to help anthracite hold and recover markets. Dealer helps have been pushed. The latest development calls for series of lectures to retail groups on coal and efficient combustion.

The old spirit of "take it or leave it" is dead.

Labor History Traces Decline of Union Tonnage From 70 to 34 per Cent of U. S. Total

By Sydney A. Hale

Special Contributor, *Coal Age*
New York City

AT THE CLOSE of the World War over 70 per cent of the bituminous tonnage mined in the United States was produced by union labor and under contractual relations between the United Mine Workers of America and the operators. Last year less than 34 per cent of the tonnage came from union mines. Had it not been for the general improvement in soft coal demand incident to the anthracite strike during the final quarter of 1925 the percentage of union-mined tonnage would have been still smaller.

This assertion is fully borne out by the figures in Table XI. The shift of districts and entire states from the union to the non-union column is striking. Equally significant is the rapid increase in the output from the non-union districts of the Appalachian Region. Maryland and the skeleton-organized Tennessee, which is really non-union and is so treated here, are the only exceptions. Central Competitive Field tonnage has suffered a marked decline since the war-time peak. The Virginias, the non-union areas in Pennsylvania, Kentucky and Alabama, on the other hand, are forging ahead and the 1925 output for those sections establishes new records. And yet, great as these gains have been, they by no means test the productive capacity of the non-union fields.

How and when these changes took place was traced in the preceding chapters in this history of the decline of union influence. Why there has been such a recession in union power remains to be considered. It is possible, of course, to give new twists to the many theories which have been advanced from time to time to explain the collapse of union control, but, upon analysis, they all resolve themselves into two underlying causes:

(1) Dissatisfaction with and hos-

tility to the set-up and policy of the United Mine Workers of America, and,

(2) Competitive conditions.

Hostility finds its fullest expression, perhaps, in southern West Virginia, the Somerset field of Pennsyl-

WHAT PRICE OBSTINACY?

The impetus given non-union development by the stand-pat wage policy of the United Mine Workers has placed the operations not recognizing the union in a position to supply 85 per cent or more of the normal bituminous coal requirements of the country. Organized labor in the coal fields, given a real start by the abuse of power by capital, is now menaced by the results of its own abuse of power.

vania and in Alabama. In many respects unionism is the antithesis of individualism—and there are hundreds of strong individualists in the states named. West Virginia, in particular, early rebelled against a union policy which closed down mines in that state to help organized labor win a battle in some other part of the country. Dependent almost wholly upon interstate markets to sustain their enterprise, the pioneering coal producers matched the militancy of the growing union with a militancy as virile and as ruthless.

OVERSTEPS THE BOUNDS

Even in those fields in which hostility to organized labor is a minor factor, there has been a growing dissatisfaction with and a rising resentment against union policies which seem to the operators affected to penalize them for dealing with the United Mine Workers. The petty strike, which the head of the union himself admits his organization cannot completely eradicate, is naturally a sore point. Infringement by local union officials upon the province of management is another cause of complaint. Irresponsible district leadership also has been added to the burdens under which unionized mines have been compelled to operate.

The chief grievance of the outlying districts, however, has been their lack of autonomy. In the perfection of its control over the Central Competitive Field the union has adopted a program which makes all the other districts and their problems subsidiary to that field.

"It has become increasingly evident by reason of the accumulative experience over a number of years," declared the commercial operators of the State of Washington when they severed union relationships, "that the policy of the United Mine Workers of America is not one of consideration for the interests of the industry and its members in this district, but one under which those interests are sacrificed to the interests of that organization in remote districts."

This complaint merges into the broad question of competitive conditions. Without violence to the facts it may be stated that some of the pre-war breaks between operators and the United Mine Workers were due to the inherent hostility between two opposing conceptions of the basis upon which labor relations should rest. For the most part the reverses which the United Mine Workers has met since 1918 have been due to refusal to recognize the competitive conditions confronting the producers.

Whatever may have been the humanitarian considerations which persuaded the operators in the Central Competitive Field to enter into relations with the union and to assist in creating a strong labor organization by granting the check-off, the desire to stabilize conditions within their own sphere of activity and the hope that that stabilization would be extended to other districts were controlling factors in their decision. Within that field and within the outlying districts as they came into the union fold that stabilization, insofar as it applied to basic labor costs, was effected.

But the defeat of the union's efforts to enforce that stabilization in other competitive districts has made the union operators question

Concluding article in a series describing the changes in the labor status of the different bituminous coal producing districts of the United States in recent years. Preceding articles in this series appeared in *Coal Age* Sept. 25, Oct. 1, 8, 29, Nov. 19, Dec. 31, 1925, and Jan. 14, 1926.

the price paid for stabilization. So long as demand was at a peak there was no complaint because the basic wage scales in effect in the union districts set the standard for wages in competitive non-union fields. In periods of depression, however, the unorganized districts have taken full advantage of their power to readjust wages to reduce the cost of production and to maintain an undiminished tonnage.

This is strikingly illustrated in the tonnage records of central Pennsylvania and the Pocahontas region of West Virginia. In 1920, when the total bituminous output of the United States was 563,490,845 tons, the Pocahontas region produced 18,037,736 tons and central Pennsylvania, 58,172,416 tons. The following year production for the country as a whole decreased 147,538,955 tons, or 26.2 per cent; central Pennsylvania output declined 19,009,342 tons, or 32.6 per cent. But the tonnage loss for the Pocahontas region was only 587,917 tons, or 3.2 per cent!

WAGE HANDICAP HEAVY

Union mines in central Pennsylvania at that time were paying \$1.1431 per net ton for pick mining, as compared with 50@53c. in the Pocahontas district, 59.11c. in New River and 55@85c. in Westmoreland County. Non-union mines in central Pennsylvania were paying 90.31c. Skilled inside labor at the union mines was getting 93.75c. per hour, as compared with 47@67c. in the competing non-union districts; the low union rate on outside labor was 82.5c., as compared with non-union rates of 30@64c.

Under such handicaps, it is easy to understand how and why union production in the outlying and semi-organized districts has steadily shrunk and why, as in western Pennsylvania, southern Ohio and Indiana, the movement to operate independent of the union has spread. This independence, however, was not sought until after the operators had exhausted all efforts to induce the union to accord them some relief.

Western Kentucky, which competes with both the Central Competitive Field and the Appalachian Region, is typical of this situation, Muhlenberg, Ohio and McLean counties were completely organized for many years and partial recognition in Henderson, Union, Hopkins and Webster counties was a condition of long-standing. Like other outlying

Table XI—Dwindling Union Tonnage
Union-Controlled Tonnage at Peak of Power Compared with Union Output in 1925 and Non-Union Potentialities in 1926
(Figures in Net Tons)

	1918*		1925†		1926‡ Potential Non-Union Output
	Union	Non-Union	Union	Non-Union	
Alabama.....	9,241,000	10,011,000		21,238,000	27,500,000
Arkansas.....	2,227,000		450,000	965,000	2,028,000
Colorado.....	6,824,000	5,584,000		10,157,000	13,936,000
Illinois.....	89,291,000		68,997,000		
Indiana.....	30,679,000		22,074,000	50,000	
Iowa.....	8,192,000		4,818,000		
Kansas.....	7,562,000		4,105,000		
Kentucky.....	18,065,000	13,548,000		52,906,000	69,886,000
Maryland.....	4,282,000	215,000		2,085,000	3,068,000
Michigan.....	1,465,000		735,000		
Missouri.....	5,611,000	17,000	3,058,000		
Montana.....	4,079,000	454,000	2,670,000		
New Mexico.....	603,000	3,420,000		2,484,000	3,120,000
North Dakota.....	216,000	504,000		1,110,000	1,976,000
Ohio.....	46,055,000		31,382,000	230,000	500,000
Oklahoma.....	4,813,000		140,000	2,525,000	3,640,000
Pennsylvania.....	109,029,000	69,522,000	23,082,000	104,939,000	131,060,000
Tennessee.....	6,831,000			5,866,000	8,060,000
Texas.....	1,131,000	1,130,000		879,000	1,092,000
Utah.....		5,137,000		4,624,000	5,980,000
Virginia.....	723,000	8,318,000		12,274,000	14,716,000
Washington.....	4,082,000		1,216,000		1,830,000
West Virginia.....	44,386,000	45,550,000	4,334,000	125,797,000	161,980,000
Wyoming.....	9,438,000		6,951,000		
Total.....	414,845,000	163,410,000	174,012,000	349,345,000	449,280,000
Union Percentage.....	71.7		33.2		

*Division between union and non-union tonnage based on areas affected by general strike of 1919.

† Total tonnage estimated from weekly coal production figures.

‡ The estimates in this column were fixed by multiplying by 52 the maximum weekly production of each state during recent months of 1925.

districts, western Kentucky felt the burden of competition growing heavier year after year. When it came to a question of renewing the 1920 scale in 1924 under the Jacksonville agreement terms, the operators refused to sign up. To suggestions from their own district organization that a modification be made, the international officials of the United Mine Workers turned a deaf ear.

The result of this stand-pat policy was the loss of the entire district. The operators re-established the 1917 scale, reducing the base pick-mining rate from \$1.699 per ton on lump coal to \$1.25, the minimum outside day labor rate from \$6.06 to \$3.56 and skilled and semi-skilled inside labor from \$6.59@7.20 per day to \$4.09@4.45 per day. Under these rates, western Kentucky has been able to become a strong competitor of Illinois for business which a few years ago was competition-proof.

In defense of a stand which has cut the percentage of union-mined coal over 50 per cent, the United Mine Workers offer two alleged justifications. Mr. Lewis and his associates grow eloquent in upholding the sanctity of the contract signed at Jacksonville two years ago and vehement in their denunciation of those signatories who have sought their commercial salvation outside of the union fold. Pressed further, the union officials will argue that their stand has had a stabilizing effect upon wages and intimate that to consent to a downward revision

would only open the door to further reductions in non-union wages.

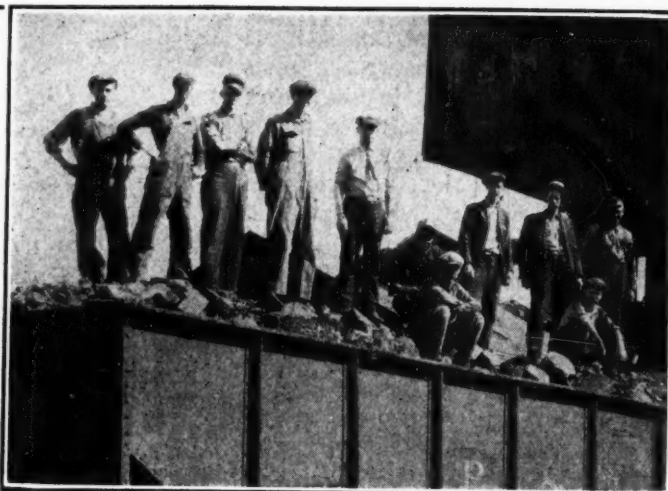
The first defense, of course, conveniently overlooks the fact that the operators, when conditions were reversed, consented to an upward revision of the rates in existing contracts. The second defense is problematical. The majority of the union operators would like to see some evidence of consideration of the wage situation in the light of the developments since 1923—something more than a fiat that nothing will be done.

That the union has served a useful purpose in the past is not to be denied. In an industry with the developed capacity for overproduction existing in bituminous coal, some check against a return to the conditions of forty or fifty years ago is necessary. Some of the militancy with which the union fought to prevent the worker from being the helpless victim of a nickel-slashing scramble for business was justifiable.

Such a check is still needed. But a policy which makes it increasingly difficult for operators who recognize the union to survive cannot be upheld. Since the war, and more particularly since the signing of the Jacksonville agreement, a strong reaction against the United Mine Workers has set in. If the union is to escape the fate of its predecessors, it must demonstrate that it recognizes its obligations to the operators with whom it deals. Otherwise the drift to non-unionism will continue at an increasing rate of speed.

"Pittsburgh Plan" Puts 16 Mines Back Into Operation

Movement Advances Slowly in
Western Pennsylvania and Ohio
with Little Violence of Labor



They loaded out the first car at Banning No. 2

"THE Pittsburgh Plan," as the effort to resume mine operations in western Pennsylvania and eastern Ohio on approximately the wage scale of 1917 is called, has passed through its initial period of eight months and now, at the beginning of 1926 it is possible to summarize what has been done. In western Pennsylvania the Pittsburgh Coal Co. is alone in the movement, except for the Ellsworth Collieries Co. and the Pittsburgh & Erie Coal Co., but in the Pomeroy Bend region of Ohio four other companies stand with it. There are now 16 mines working under the Pittsburgh arrangement—nine in Pennsylvania and seven in Ohio. The Pittsburgh Coal Co. employs about 1,600 men. The maximum daily production of the company is 6,187 tons.

During the entire period of operating mines under "The Pittsburgh Plan" there has been a minimum of disorder. This has been one of the surprises of the movement. It is a fact which gives the proponents of the idea encouragement for the forthcoming year.

RESULTS OF PLAN

Two of the outstanding facts about the operation of the plan are: The general lack of active support which coal operators have given the originator of the scheme—the Pittsburgh Coal Co.—and the surprising readiness of union miners to return to work at 1917 wages in fields that have been so strongly organized.

Economic conditions compelled the adoption of the "Pittsburgh plan." The two factors that had been strangling the western Pennsylvania and eastern Ohio coal trade during the past few years were labor and freight rates. In the minds of the operators, one was as bad as the

By Arthur R. Friedman
Pittsburgh, Pa.

other, and correction of one would not entirely counterbalance the detrimental effect of the other.

The Pittsburgh and the No. 8 Ohio districts were slowly losing their best market, the lake trade, because of the alleged preferential freight rates granted to southern West Virginia and Kentucky fields, and the non-union labor conditions in effect in those districts. Southern fields were selling coal up the Lakes cheaper than it could be mined in western Pennsylvania and Ohio. The two fields found themselves unable to recoup their lake losses in other markets.

SITUATION AT STANDSTILL

There the situation rested for a time. In the words of C. J. Good-year, commissioner of the Pittsburgh Coal Producers' Association: "When a business concern finds itself unable to sell its goods; when the market price drops and a huge inventory remains; that concern either cuts the price and stays in the market, or it goes bankrupt. The union theorized about the situation. The operators dealt with it in a practical way. They tried alone to handle the situation in 1924, but failed. The union refused to co-operate in 1925."

So the new plan was started. The first "1917" mine was opened by the Pittsburgh Coal Co. on May 3, 1925. The mine was known as Dark Hollow and is situated near Pomeroy, Ohio. A handful of men started to work in the operation which had been shut down for many months. Wide attention was directed to this experiment. The tippie was picketed by union men and union sympathizers, but there

was no violence. After the usual cleaning-up period, production was started and it has continued uninterrupted to the present time.

Nearly two months later, after it was apparent that Dark Hollow was likely to continue as a producer, the second mine was started by the company in Ohio. This is known as Thomas mine and was opened on June 17, 1925. On June 27, the third Ohio mine was opened, known as Syracuse. The latter two are also situated near Pomeroy. The three have been working ever since.

A summary of the Pittsburgh Coal Co. mines working in Ohio, giving the approximate number of men at work at the present time and the average daily tonnage follows:

Mine	Opened	Men	Av. Daily Output Tons
Dark Hollow.....	May 3	207	759
Thomas.....	June 17	129	418
Syracuse.....	June 27	156	432

It is evident from this summary that the Ohio mines of the Pittsburgh Coal Co. are producing an average daily rate of 1,609 tons of coal, with 492 men at work.

OPENS PENNSYLVANIA MINE

After waiting until later in the summer the company opened its first mine in western Pennsylvania. The growing success of the Ohio operations paved the way for the starting of those in the other state. The location of the first Pennsylvania operation was kept a close secret at first.

Finally, on Aug. 20 the company announced it had started operations at Banning No. 2 mine at Whitsett Junction, eight miles from Fayette City. A total of 36 men went to work the first day. The company claimed all the men were former em-

ployees of the company and also former members of the United Mine Workers, and had petitioned the company that they be allowed to go back to work after a long period of idleness. About 100 pickets took up their positions the first day. On the second day, the force of men at work had increased to 52, but there were still 88 pickets at the pit. On the third day the first car of coal was shipped when 66 men were at work.

The first movement toward the establishment of a new union was taken by the men at work at this mine on Aug. 29. The men organized Local No. 1 of a new union, elected officers and prepared to carry on in the same manner as the United Mine Workers.

On Sept. 16, the Pittsburgh Coal Co. started its second mine in western Pennsylvania at Banning No. 1, located on the Pittsburgh & Lake Erie R.R. at Van Meter, on the Westmoreland-Fayette county line. This mine is two miles from the first mine started. The first day's force consisted of 29 men. Seventeen pickets were on hand the first day. On the second day the working force had increased to 105 men. By this date, also, 205 men were at work at Banning No. 2 mine, and the company also had shipped 573 tons of coal that day.

SURPASS 1,000 TONS OCT. 3

The first goal of the company, production of 1,000 tons a day, was surpassed at Banning No. 2 on Oct. 3 when 225 men produced 1,188 tons. The mine produced for the week ended Oct. 3, a total of 5,225 tons, while the same week's total at Banning No. 1 was 2,472 tons with 165 men at work.

For the week ended Oct. 10, production from the two mines was 8,711 tons. That date was pay day, also, and the company distributed \$26,131.26 representing a two-weeks' pay. At Banning No. 2, 208 men participated in \$17,046.51 and at Banning No. 1, 151 workmen shared \$9,084.77.

With 107 men at work, the company reopened the third Pennsylvania mine, Midland No. 1, on Oct. 17. This mine is three miles from Canonsburg and 27 miles from Pittsburgh. The company at this time also announced that it had 37 other mines still idle, but that any of them would be reopened upon petition of the men. Two days later, the first coal was mined at Midland

with 162 men at work. On the preceding Saturday, Banning No. 2 set a new daily production record of 1,228 tons.

First evidences of disorder were uncovered at Midland, when deputies found 10 sticks of dynamite against the side of one of the mine buildings on Oct. 23. On the night of Oct. 24, a man was killed in a cutting affray when union sympathizers attacked a number of the company workmen. At this time the Pittsburgh Coal Co. issued a statement indicating it would give all protection to its men who were the victims of unwarranted and unjustifiable attacks.

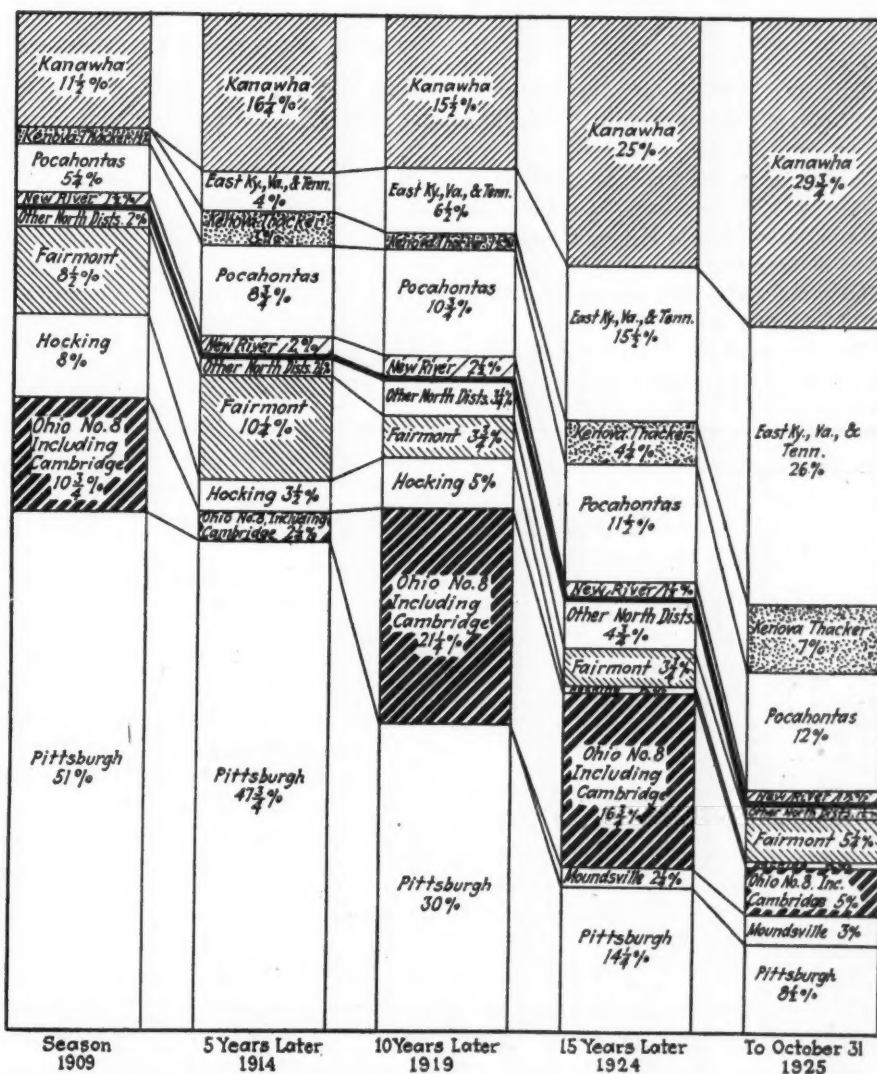
For the week ended Oct. 24, production at the three mines of the

company reached 12,669 tons. The company had 557 men at work.

Two more mines were opened in quick succession. The first was Montour No. 10 at Library, in Allegheny County, and a few days later, on Nov. 12, the fifth mine was started in Scott township. This operation is known as the Mansfield mine. It was opened to supply the citizens of Carnegie with coal. By this time the company had 905 men at work.

On Nov. 23, the company announced a new maximum daily production of 3,364 tons from the five mines and on Dec. 1, it was said a total of 1,000 men were at work in the mines. On Dec. 9, the daily rate

Loss of Markets Started the "Pittsburgh Plan"



Percentage of Lake Cargo Coal by Origin Districts 1909, Five, Ten and Fifteen Years Later Compared with Season of 1925 to Oct. 31

The figures for 1909 and 1925 illustrating the decline of the union-wage coal and the increase of non-union-wage coal and upon which this graph was drawn follow:

	1909		1925	
	Tonnage	Percentage	Tonnage	Percentage
Pittsburgh District	7,842,971	51.09	1,923,966	8.53
Other North Districts	4,447,428	28.97	3,459,358	15.33
Kanawha District	1,776,986	11.58	6,694,922	29.67
Other South Districts	1,283,174	8.36	10,486,614	46.47
Total	15,350,559	100.00	22,564,860	100.00

Pittsburgh Coal Co. Operations Working In Pennsylvania

Mine	Location	Opened	Men at Work	Maximum Weekly Tonnage	Maximum Daily Tonnage	Date
Banning No. 2	Whitsett	Aug. 20	260	7,192	1,312	Dec. 8
Banning No. 1	Van Meter	Sept. 16	240	4,632	937	Dec. 5
Midland No. 1	Houston	Oct. 17	275	5,780	1,211	Dec. 6
Montour No. 10	Library	Nov. 8	210	3,698	938	Jan. 5
Mansfield	Carnegie	Nov. 12	60	670	180	Dec. 18
Warden	McKeesport	Jan. 4	150			
Dickson	Imperial	Jan. 13	74			

was again exceeded with a total of 4,069 tons of coal.

On this same day, a woman was killed at Montour No. 10 mine at Library when a driver of the company, stoned by a mob, let his machine run wild and it crashed into the crowd. At almost the same time, a miners' house was dynamited at Midland mine.

On Saturday, Dec. 12, a payroll of \$60,043.37 was distributed and the production for that week had reached 20,942 tons. The Dec. 24 pay was \$72,535.36, the highest of the entire operating period.

The sixth mine of the company was opened Jan. 4, when Warden mine, at Douglas station, on the Youghiogheny River, was started. A force of 120 men went to work in this plant, which is the most modern of the company's properties. On this same date, the company had a total of 1,244 men at work.

The seventh Pennsylvania mine—Dickson, three miles from Imperial,

Pa.—opened Jan. 13 with 74 men.

The company's grand total tonnage for the week ended Jan. 9 was 24,820.

In the accompanying table showing operations of the Pittsburgh Coal Co. in western Pennsylvania is included the average number of men at work in recent weeks, the maximum weekly tonnage from each mine, which occurred during the week of Dec. 7 to 12, and the maximum daily tonnage. These tonnages have not changed much since then.

FEW PENNSYLVANIA FOLLOWERS

The Pittsburgh Coal Co. had only one follower in western Pennsylvania—the Boggs mine of the Montour & Lake Erie R.R. which ran for two days beginning Aug. 24—until the first week of November when the Ellsworth Collieries Co., a subsidiary of the Bethlehem Steel Co., opened its Marianna mine in Washington County, on the 1917 scale. This mine now has 175 men at work, but

while working conditions are now reported as favorable, this mine found greater difficulty in getting started than any of the Pittsburgh Coal Co. properties. This concern also has men working in its Acme mine at Cokeburg, preparing for resumption of operations, but coal has not yet been run.

The only other mine reported working 1917 scale in western Pennsylvania is Summer No. 2 of the Pittsburgh and Erie Coal Co. at Braznell, in Fayette County. Seventy-five men are at work there.

In the Ohio field since the first stage of the "Pittsburgh" movement, mines of other companies have proceeded under the plan. In that district each of the following companies now has one mine operating: The Stalter-Essex Co., the Vulcan Coal Co., the Blackstone Coal Co. and the Rutland Coal Co.

It is fair to say, after eight months' trial, that the 1917 wage plan in western Pennsylvania and Ohio has had neither phenomenal success nor dismal failure. It has produced coal when nothing else would produce it in a region overwhelmed by non-union competition and the movement is still expanding slowly with hope high for a broader spread during this year.

Coal Produced in Pennsylvania in 1924^a

(Exclusive of product of wagon mines)

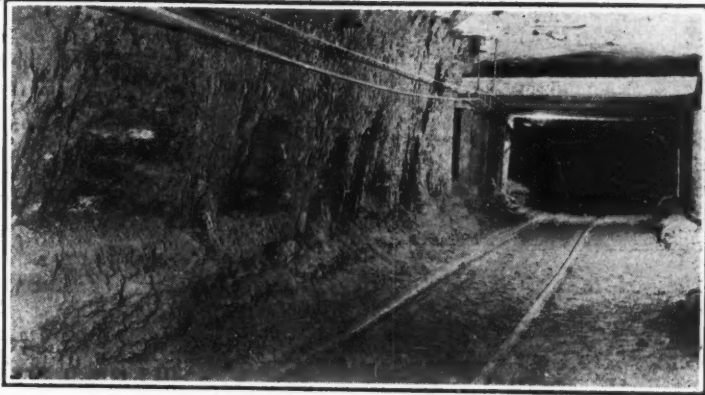
County	Net Tons				Value		Number of Employees			Average Number of Days Worked	Average Tons per Man per Day
	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines	Total Quantity	Average per Ton	Underground	All Others	Surface		
Allegheny	12,658,439	1,716,678	122,708		14,497,825	\$33,090,000	12,914	3,643	2,194	187	4.12
Armstrong	3,336,434	191,291	105,894		3,633,619	7,446,000	3,985	924	753	146	4.39
Beaver	176,582	59,875	306		236,763	503,000	2.12	154	100	281	3.93
Bedford	230,884	13,214	7,900	28,195	280,193	772,000	2.76	726	216	1,059	3.39
Blair	36,219	22,795	729	11,944	71,687	174,000	2.43	221	45	301	2.28
Bradford	3,413	740			4,153	12,000	2.89	13	3	19	2.31
Butler	1,292,007	43,236	17,111		1,352,354	2,877,000	2.13	1,489	421	2,253	3.56
Cambria	14,307,443	2,031,476	165,097	135,652	16,639,668	42,050,000	2.53	16,219	4,326	22,861	4.08
Cent.	748,890	65,156	650		814,696	1,936,000	2.38	1,127	283	1,596	4.27
Clarion	1,169,429	124,090	4,868		1,298,387	2,655,000	2.04	1,615	400	2,272	3.19
Clearfield	4,931,916	241,647	76,573	60,868	5,311,004	11,984,000	2.26	7,270	1,771	10,208	3.49
Clinton	276,389	19,808	3,729		299,926	598,000	1.99	134	48	322	3.97
Elk	1,083,618	18,674	35,277		1,137,569	2,842,000	2.50	1,321	227	1,729	3.08
Fayette	16,252,397	260,188	515,149	8,404,399	25,432,133	57,081,000	2.24	11,873	9,571	4,235	4.78
Greene	3,602,335	33,446	48,630	63,118	3,747,529	7,680,000	2.05	1,587	1,129	638	4.71
Huntingdon	727,195	14,808	21,854		763,857	1,940,000	2.54	1,001	271	1,400	2.64
Indiana	6,504,277	206,370	44,132	287,805	7,042,584	15,923,000	2.26	8,441	2,069	11,945	4.06
Jefferson	2,504,377	68,869	49,587	321,243	2,944,076	6,559,000	2.23	3,543	891	5,013	3.70
Lawrence	183,785	37,966	12,412		234,163	788,000	3.37	249	91	394	2.59
Mercer	274,273	10,565	15,231		300,069	910,000	3.03	389	128	595	2.77
Somerset	8,173,394	154,864	108,478		8,436,736	18,118,000	2.15	7,272	2,094	10,891	4.06
Tioga	251,726	35,462	5,910		293,098	961,000	3.28	672	151	969	2.51
Washington	17,338,959	427,558	121,045	50,278	17,937,840	39,050,000	2.18	14,220	4,524	21,235	4.53
Westmoreland	14,064,798	758,852	350,653	2,628,348	17,802,651	38,907,000	2.19	12,195	5,024	20,333	4.84
Other counties c.	111,642	8,108	1,443		121,193	308,000	2.54	143	35	200	2.31
Total (bitum.)	110,240,821	6,565,736	1,835,366	11,991,850	130,633,773	295,164,000	2.26	108,773	38,312	169,322	4.27
Anthracite	77,247,499	3,043,939	7,635,424		87,926,862	477,231,000	5.43	76,035	43,328	160,009	2.74
Grand total	187,488,320	9,609,675	9,470,790	11,991,850	218,560,635	772,395,000	3.53	184,808	81,640	329,331	2.94

^a Note that the coal statistics of the Geological Survey for a given year include only the mines that had an output in that year. Many mines that operated in 1923 produced no coal in 1924; moreover, many of the mines that did produce in 1924 worked for a short time only. The number of active bituminous mines of commercial size in Pennsylvania was 2,868 in 1923 and 2,122 in 1924.

^b Includes also loaders and shotfirers. ^c Fulton, Lycoming, McKean and Venango.

Statistics compiled by U. S. Bureau of Mines.

Records Show 1925 Rivals 1920 as "Coal's Safest Year"



Death Rate per Million Tons Is 3.68—Improvement Over 1924 Was Only in Soft-Coal Mines—Gas and Dust Explosions Are Reduced—Rock Dusting Helps

THE CHIEF POINT of interest in the coal mining industry in the year 1925 from the standpoint of mine safety or accident-prevention, was the marked reduction in the accident-cost of the coal: that is, in the death rate per million tons. An absolute reduction in the loss of life was to be expected because of the idleness of the anthracite mines during one third of the year, but there was a further reduction of about 12 per cent in the combined anthracite and bituminous death rate per million tons during the period of actual operations. The decrease was in the rate for bituminous mines; the anthracite rate was higher than in the previous year.

This net reduction for the industry as a whole was equivalent to a saving of nearly 300 lives. In other words, if the 1924 rate of 4.19 deaths per million tons for the entire industry had continued through 1925, the number of lives lost last year would have been about 300 more than the number actually reported. The estimated 1925 rate per million tons is 3.68. Only 1920 has had a lower rate than this in the whole record history of coal mining in the United States.

The number of fatalities at all coal mines during the half-decade ending with 1925 is shown in Table I.

The fact that fewer lives were lost in 1921 and 1922 was largely due to idleness or part-time operation of many mines during those two years.

In the headpiece is shown an example of one hundred-per cent dusting. This entry in a Phelps Dodge Corp. mine at Dawson, N. M., is treated with dust both wet and dry, and at the right is a battery of V-troughs loaded and ready to dump its contents into the air upon the arrival of the pioneer wave ahead of any approaching explosion.

By W. W. Adams

Statistician, U. S. Bureau of Mines,
Washington, D. C.

In 1921 the industrial depression prevailing in many parts of the country had the effect of greatly curtailing the output of coal at bituminous

SHALL ROCK-DUSTING GET THE CREDIT?

Mr. Adams, being a careful statistician and not a propagandist, scrupulously avoids saying that the steadily expanding program of rock-dusting in American coal mines is to be credited with last year's good showing in the record of accidents. However, he does cite the outstanding case of the June 8 explosion at Sturgis, Ky., where rock dust certainly saved the lives of 130 men. He points out that 1925 had more major explosions than 1924 but that the fatalities were 44 per cent less. In other words the death dealing opportunity was there but in many instances so was rock dust. In September 211 mines producing 11 per cent of the nation's bituminous coal were rock-dusted. This means something.

mines; in 1922, the great strike in both the bituminous and anthracite fields closed many of the mines during a large part of the year. Much of the reduction in the number of fatal accidents in those two years was, therefore, simply due to the fact that the mines were not in oper-

ation. The loss of life indicated by the foregoing figures resulted in yearly death rates per million tons as shown in Table II.

These figures clearly show the material reduction in the per million ton death rate in 1925 as compared with the rate for 1924. Barring unexpected revelations by the reports for December over and above the two major disasters already known to have occurred, it may be stated that the "accident-cost" of the Nation's fuel supply was lower in 1925 than in any of the last five years. Moreover, except for 1920 when the rate was 3.45 per million tons, records now available indicate that the 1925 rate will be as low as, if not lower than, that of any year in the recorded history of coal mining in the United States.

In this connection it should be emphasized that the per-million-ton death rate represents only the accident cost of the coal; that is, the price paid in human life for the coal produced. The per-million-ton death rate does not indicate the relative hazards of coal mining as compared with other industries of occupations; it does not indicate the hazards of mining in one State or district as compared with those in another State or district; nor does it represent the

Table I—Fatalities at All Coal Mines,
1921-1925

Year	Anthracite	Bituminous	Total	Per Cent Increase or Decrease from Previous Year
1921.....	547	1,440	1,987	-12.5
1922.....	300	1,679	1,979	- .4
1923.....	509	1,949	2,458	+24.2
1924.....	496	1,900	2,396	- 2.5
1925 (est.)..	400	1,740	2,140	-10.7

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Table II—Yearly Death Rates per Million Tons

Year	Deaths	Rate per Million Tons	Per Cent Increase or Decrease from Previous Year
1921.....	1,987	3.92	+13.6
1922.....	1,979	4.15	+5.9
1923.....	2,458	3.74	-9.9
1924.....	2,396	4.19	+12.0
1925 (est.)..	2,140	3.68	-12.2

risk of mining from the point of view of the miner or the insurance company.

The miner and the insurance carrier are primarily concerned with the probability and degree of the employee's personal freedom from accidental injury or death while in the mine, and the insurance company carrying the risk must have a sound basis for measuring the hazard to which the mine employees are exposed. Probably the best basis for measuring the miner's personal risk or for comparing the relative hazards of mining and other occupations and thus affording a sound basis for establishing equitable insurance premium rates, as between industry and industry, is the accident frequency and accident severity rates based on man-hour or man-year exposure, preferably the former.

TWO DISTINCT RATES

It is indeed possible, that with the increasing mechanization of mining operations and the consequent rise in the average daily production per man employed, that the death rate per million tons might decline while the death rate per man hour might increase. It is essential, therefore, that the two kinds of rates be not confused when the subject of mine accidents is under consideration. The rates represent two distinctly different things.

The 2,140 fatalities in 1925, which include an estimated figure for December to supplement actual returns for the period January to November, may be classified by causes, with comparative figures for 1924 as shown in Table III.

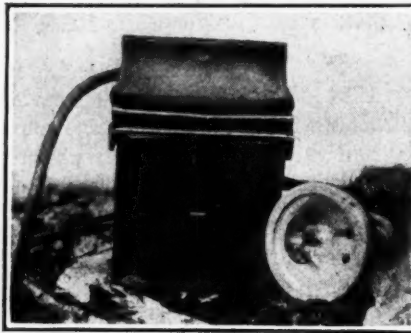
These figures for 1925 are subject

Table III—Fatalities for 1924-25 Classified by Causes

	1924	1925	Increase or Decrease
All causes.....	2,396	2,140	-256
Surface accidents.....	138	115	-23
Shaft accidents.....	29	34	+5
Underground accidents.....	2,229	1,991	-238
Falls of roof or coal....	1,062	1,045	-17
Haulage.....	350	345	-5
Gas and dust explosions.....	536	344	-192
Electricity.....	81	82	+1
Explosives.....	100	89	-11
Miscellaneous.....	10	86	-14

to such slight modification as final returns may require.

The marked reduction in the fatality rate per million tons in 1925 as compared with the previous year, that is, from 4.19 to 3.68, was due mainly to the smaller loss of life from explosions of gas and coal dust, particularly those explosions classed as "major." A major explosion is defined as one in which five or more lives were lost. During the year just closed 13 major explosions occurred with an aggregate loss of 262 lives. In the previous year only 10 major explosions occurred but a much larger number of deaths resulted from them; the record showed that 459 men were killed by the 10 explosions. The per-million-ton death



Safe Lamps Save Lives

This type of electric cap lamp is one of those approved by the Bureau of Mines for use in gassy mines. The acceptance of electric lamps underground is widening and no doubt adds something to the safety factor of the whole industry.

rate based exclusively on these major explosions was 0.45 in 1925 as compared with 0.80 in 1924, the decline indicated by the rate for the past year representing a reduction of about 44 per cent. In addition to the 262 deaths from the 13 major explosions in 1925, the records show that 82 men were killed by local or minor explosions, that is, explosions in which less than five lives were lost.

Because of the absence of reports it is not possible to state what part was played by rock dust in preventing many of these minor explosions from spreading through larger areas of the mines and thus, with the attending greater loss of life, entering the class of the so-called major disasters. However, an illustrative example of the value of rock dust in confining an explosion to or near its place of origin is afforded by the disaster at Sturgis, Ky., on June 8, 1925, in which 17 men lost their lives.

According to a recent report¹ this

¹Bulletin 18, Methods and Costs of Rock-Dusting Bituminous Coal Mines; Carnegie Institute of Technology, Pittsburgh, Pa., 1925; p. 1.

explosion originated in an entry which had not yet been rock-dusted. A miner drilled into a strong gas feeder, which was ignited by his open-flame lamp. When the resulting explosion reached the rock-dusted entries it was stopped and the lives of 130 men working in rock-dusted parts of the mine were saved.

The same report states that 211 bituminous mines were using rock dust in September, 1925 and that the output of coal from these mines was about 11 per cent of the entire production of bituminous coal in the United States in 1924. The efficacy of rock dusting, as demonstrated in the explosion at Sturgis, gives substance to the hope that the adoption of rock dusting by an increasing number of mines will prevent the occurrence in the future of such disastrous explosions as have marred the record of past years.

Over a period of years major explosions similar to those listed in Table IV have caused an average of about 10 or 12 per cent of all accidental deaths from all classes of accidents in the coal-mining industry, the figures varying from less than 2 per cent in 1921 to more than 19 per cent in 1924. In 1925 the 13 major explosions caused about 12 per cent of the total number of deaths from all causes at the mines.

FIFTY PER CENT DUE TO FALLS

Falls of roof and coal usually cause nearly half of all fatal accidents at coal mines. The average percentage over a ten-year period (1914-23) was 48; in 1925 it was 49. The 1,045 fatalities from this cause in 1925 represented a per-million-ton death rate of 1.80 as compared with 1.86 in the previous year. Haulage accidents underground resulted in 345 fatalities and represented a fatality rate of 0.59 per million tons as against 0.61 in 1924. About 17 per cent of all coal-mine fatalities are caused by haulage equipment.

Accidents resulting from blasting or handling of explosives usually account for about 4 per cent, exclusive

Table IV—The 13 Major Explosions During 1925

Date	Killed	Mine	Location
Jan. 15	6	Diamond No. 1	Providence, Ky.
Feb. 20	52	City	Sullivan, Ind.
March 17	33	Barrackville	Barrackville, W. Va.
April 26	5	Hutchinson	West Newton, Pa.
May 22	7	Woodward	Edwardsville, Pa.
May 27	53	Farmville	Coal Glen, N. C.
May 31	6	No. 2	Piper, Ala.
June 8	17	No. 9	Sturgis, Ky.
July 23	10	Rockwood	Rockwood, Tenn.
Aug. 3	10	Dorrance	Wilkes-Barre, Pa.
Nov. 13	5	Finley	Madisonville, Ky.
Dec. 10	53	Overton No. 2	Acmor, Ala.
Dec. 14	5	Wilkeson	Tacoma, Wash.

Oxygen-Apparatus Crew

These men, at the Consumers Mining Co.'s Harmar mine near Pittsburgh, Pa., form one of the ever increasing number of rescue teams in this country. Not only is the coal industry's defence against explosions being raised higher but more men everywhere are trained in the vitally important business of what do when trouble occurs.



of those major gas or dust explosions in which explosives were the agents of ignition. In 1925 accidents from explosives caused 89 deaths, indicating a per-million-ton fatality rate of 0.15; in the previous year the rate was 0.17.

Electricity was directly responsible for 82 deaths during the past year, the fatality rate per million tons

being 0.14 as compared with the same rate for the preceding year. Deaths from miscellaneous causes underground numbered 86 and represented a fatality rate of 0.15, as compared with 0.17. Shaft accidents caused 34 deaths, the fatality rate being 0.06 as against 0.05. Accidents from all causes above ground resulted in 115 deaths and represented

a fatality rate of 0.20 as compared with 0.24.

Thus the record for 1925 shows that while the industry operated under certain handicaps during the year, the country's coal supply was obtained at a lower cost in human life than that shown by the record of previous years, with the single exception of 1920.

Coal Produced in Kentucky in 1924

(Exclusive of Product of Wagon Mines.)

County	Net Tons				Total Quantity	Value		Number of Employees a				Average Number of Days Worked	Average Tons per Man per Day
	Loaded at Mines for Shipment	Sold to Local Trade and Used By Employees	Used at Mines for Steam and Heat	Made Into Coke at Mines		Total	Average per Ton	Underground	All Others	Surface	Total		
Eastern District													
Bell.....	2,279,928	35,070	15,859	.....	2,330,857	\$4,462,000	\$1.91	2,402	908	584	3,894	171	3.51
Boyd.....	65,025	3,018	50	.....	68,093	177,000	2.60	114	61	33	208	156	2.10
Breathitt.....	163,622	6,728	1,780	.....	172,130	306,000	1.78	151	69	39	259	180	3.70
Carter.....	70,943	36,432	73	.....	107,448	199,000	1.85	157	71	40	268	176	2.28
Clay.....	184,767	2,818	1,890	.....	189,475	338,000	1.78	253	105	60	418	158	2.88
Floyd.....	3,700,270	47,268	53,630	.....	3,801,168	7,081,000	1.86	2,406	1,254	732	4,392	197	4.39
Harlan.....	9,340,731	64,431	43,038	123,835	9,572,035	19,579,000	2.05	5,183	2,638	1,571	9,392	209	4.87
Johnson.....	813,920	10,567	17,337	.....	841,824	1,841,000	2.19	716	276	183	1,175	176	4.08
Knott.....	340,509	3,536	.....	.....	344,045	598,000	1.74	147	66	37	250	185	7.45
Knox.....	427,607	7,158	8,596	.....	443,361	769,000	1.73	412	102	99	613	197	3.67
Laurel.....	81,981	2,600	50	.....	84,631	162,000	1.91	108	37	26	171	212	2.34
Lee.....	35,000	2,320	1,000	.....	38,320	79,000	2.06	26	9	15	50	243	3.16
Letcher.....	4,653,204	61,839	50,063	.....	4,765,106	8,620,000	1.81	2,386	1,216	713	4,315	209	5.27
McCreary.....	827,715	17,283	1,764	.....	846,762	1,679,000	1.98	796	272	124	1,192	167	4.26
Martin.....	420,079	2,519	.....	.....	422,598	728,000	1.72	186	107	69	362	191	6.11
Morgan.....	20,862	3,160	3,542	.....	27,564	101,000	3.66	69	22	50	141	235	.83
Perry.....	5,450,646	76,068	3,228	.....	5,529,942	9,886,000	1.79	3,037	1,447	872	5,356	207	4.99
Pike.....	5,756,226	53,024	63,522	22,959	5,895,731	10,602,000	1.80	3,284	1,981	1,319	6,584	193	4.64
Whitley.....	604,439	12,038	13,230	.....	629,707	1,447,000	2.30	817	259	182	1,258	159	3.14
Other counties c.....	15,261	1,000	75	.....	16,336	20,000	1.22	18	9	9	36	74	6.13
Total.....	35,252,735	448,877	278,727	146,794	36,127,133	68,674,000	\$1.90	22,668	10,909	6,757	40,334	195	4.58
Western District													
Daviess.....	73,270	75,628	991	.....	149,889	\$253,000	41.69	148	41	24	213	183	3.85
Henderson.....	338,591	70,251	18,769	.....	427,611	699,000	1.63	316	163	61	540	181	4.38
Hopkins.....	3,337,234	155,068	59,506	.....	3,551,808	6,029,000	1.70	2,036	884	846	3,766	171	5.53
McLean.....	45,757	4,000	445	.....	50,202	92,000	1.83	74	28	56	158	46	6.96
Muhlenberg.....	1,331,403	50,631	20,747	.....	1,402,781	2,592,000	1.85	3,401	1,345	592	5,338	42	6.19
Ohio.....	484,517	10,560	11,667	.....	506,744	925,000	1.83	921	313	340	1,574	59	5.48
Union.....	1,020,074	27,648	34,214	.....	1,081,936	2,026,000	1.87	789	443	202	1,434	178	4.24
Webster.....	1,780,165	13,225	33,139	.....	1,826,529	3,404,000	1.86	1,419	532	282	2,233	176	4.65
Other counties d.....	19,436	3,135	.....	.....	22,571	39,000	1.73	92	45	39	176	161	.80
Total.....	8,430,447	410,146	179,478	.....	9,020,071	16,059,000	\$1.78	9,196	3,794	2,442	15,432	115	5.06
Total all Kentucky	43,683,182	859,023	458,205	146,794	45,147,204	84,733,000	\$1.88	31,864	14,703	9,199	55,766	174	4.67

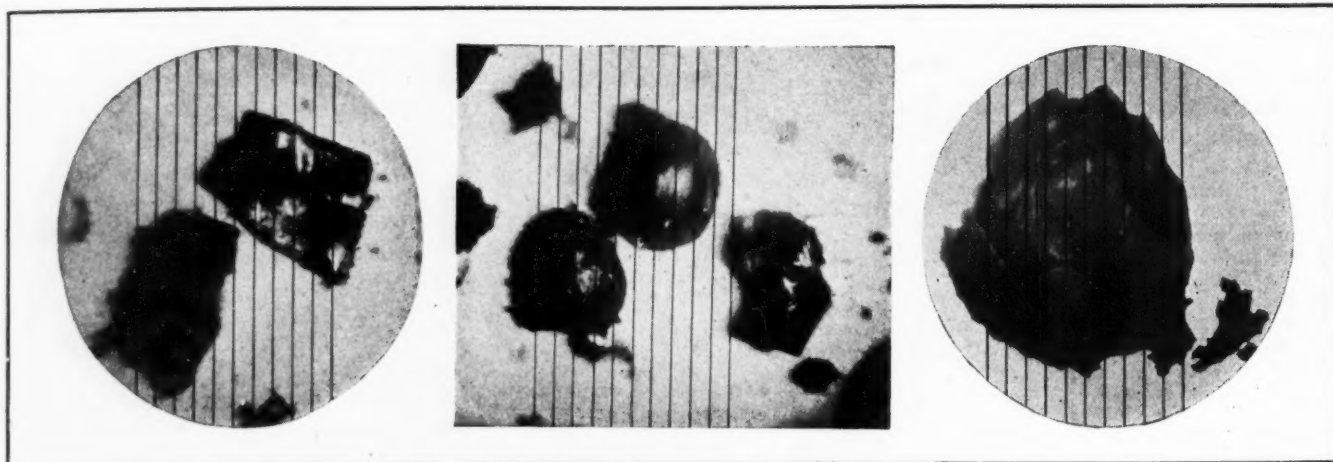
a Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of commercial size in eastern Kentucky was 663 in 1923 and 496 in 1924; in western Kentucky it was 172 in 1923 and 164 in 1924; in the state it was 835 in 1923 and 660 in 1924.

b Includes also loaders and shotfirers.

c Lawrence, Magoffin and Wayne.

d Caldwell, Christian, Crittenden and Hancock.

Statistics compiled by U. S. Bureau of Mines.



Low-Temperature Semi-Coking Benefits Coal

Toledo Plant Manufactures Amalgam—Rhode Island Field Prepares to Produce a Carbonized Product—Charring Coal Dust in Suspension Is New Venture

By R. Dawson Hall

Engineering Editor, *Coal Age*,
New York City

THE STRUGGLE for survival in the coal industry may not depend, entirely upon reducing the cost of production and raising the quality of raw coal. It may demand also upon the improvement of coal by processing. Some advances in that direction were made in 1925. During the past year the Trent, McEwen-Runge and the McIntire processes have been showing the most lively progress. Not much has been heard from the Piron and old Ben Coal Corp. plants at Detroit, Mich., and Waukegan, Ill., respectively, so nothing will be said of them in what follows.

The Trent process of making amalgam is still in operation in Toledo, Ohio, where the product is being sold in bulk and in the form of 22-lb. paper-wrapped blocks. Bulk amalgam which is the product shipped without shaping is still on the market. In transit in railroad cars it becomes shaken into mass form. When thrown in the furnace it softens and can be spread, it is said,

In the headpiece is shown pulverized coal, highly magnified. At the left are unheated particles pulverized for the McEwen-Runge process and magnified 100 diameters. The parallel lines were ruled on the object glass and were spaced one one-thousandth of an inch apart. The angular shape of the particles can be seen clearly. The center picture shows the particles after they have been heated to 600 deg. F. The coal still retains about 30 per cent of its volatile matter but has become blistered, rounded and opaque. At the right the result of higher temperature carbonizing is shown. The particles have a surface like that of a transparent window of many small panes. This characteristic disappears upon ignition.

so as to cover the grate area. It is used industrially and being clean by reason of the amalgam process and being of extremely high heating value because of the oil in the product, it gives, it is reported, a superior heating value and less clinker trouble than unprocessed coal.

The amalgam in packages is being sold in Toledo, parts of Ontario and in Duluth and Superior. It is distributed by the Citizens Necessities Co. From 50 to 70 tons of packages, are said to be produced daily, and the expectation is that package machines will be installed that will increase the output to 300 tons per day. But the ultimate intention is to add three ovens for baking so that some of the oil in the amalgam may be driven off after briquetting in small bulk and the product sold as Superfuel in competition with anthracite.

SHIP SCREENINGS ONLY

The coal used is largely produced from the mines of the company at Middlesborough, Ky., and formerly owned by L. C. Gunter, a leading stockholder. Only the screenings are shipped to Toledo for treatment. Not much has been done recently with the plan for using the amalgam as pulverized fuel.

The plant being built to manufacture Rhode Island anthracite into Superfuel is not yet quite complete. It is designed to produce ultimately

1,000 tons daily in four units. From latest reports one unit is nearly ready for operation and another is two-thirds complete. The plant is operated by the Anthracite Superfuel Co., and is financed by the owners of the Eastern Coal Co., a coal-selling organization of Providence, R. I. Much depends on the success achieved in the operation of the ovens at this plant where the first large scale attempt is being made to turn amalgam into Superfuel. If it is as successful as is expected it is likely that the Moundsville (W. Va.) and Clearfield (Pa.) plants and perhaps the one at Spokane, Wash., may be equipped for the conversion of amalgam into Superfuel. These plants are at present idle, because, it is said, the oil costs are too high and the bituminous content in the product too great to make it possible to place the output in the most advantageous position in the market. An English firm, it is said, awaits also the success of the bake ovens at Providence.

The Moundsville plant had to buy oil from the Atlantic coast and the shipment of the oil in bulk to the plant and back in the amalgam to points in the East make the expense excessive. The coal also has 40 per cent of volatile matter and the addition of oil, without distillation, makes the product of high volatile content. As one addition leading to the production of Superfuel at Moundsville

the unit for the distillation of the raw coal is now being installed. When the successful distillation is accomplished it will be necessary to add an amalgam baking unit.

The Lapugnoy plant in France has a capacity of 500 tons per day. Its first baking unit is planned to prepare 100 tons of Superfuel daily. The briquets, which are not subjected during the latter part of the process to the oxidizing action of the air, are a trifle unclean to handle, but otherwise seem of excellent quality, burning smokelessly. Contracts are reported to have been let in Brazil and India.

The "amalgamation" of coal with oil may be made of increasing value by the use of the practices discovered and known as "selective flotation." The pyrite which has a tendency to float can be scored on its faces by aluminum sulphate and cyanide after which it will be thrown down in the amalgamation tank just as gangue is deposited in a flotation cell. Thus the pyritic content can be lowered to a minimum. Of course, the humic and resinic sulphur cannot be so reduced, and the question what to do with such impurities remains as one of the great unsolved problems.

TRENT PROPOSES SOLUTION

A proposed solution for this metallurgical problem is that advanced by W. E. Trent in a patent dated July 14 of last year. It must be remembered that the function of limestone in a furnace is partly to provide a flux and partly to convert the sulphur in the coke and iron to a calcium sulphide so that it may be removed by slagging. In the blast furnace the contact between the coke and the limestone, the patentee believes not to be sufficiently intimate to effect the elimination of the sulphur in proper degree and so he would grind the limestone to a fineness about that of the coal used in his process and by incorporating it in the amalgam he hopes to obtain in the Superfuel product that intimate contact that he is seeking.

But limestone is a gangue and will not float with coal in making amalgam unless it is dry and oil coated, so the plan is to mix the oil with limestone and stir the mixture in with the wet amalgam. The limestone being covered with oil will float, but the other gangue being wet will sink. Enough limestone will have to be added of course to remove the sulphur in what oil remains after

the amalgam is carbonized in the baking process.

The trouble with distillation of coal whether at high or low temperature, but especially at the latter, is that it is difficult to pass heat through a body of coal, not because the carbon is so impervious to heat but because the volatile gases remove the heat as it is received by the coal. When the gases are driven off in part, the coal is left in a cellular condition and that, as is well known, is one resisting the passage of heat, as is well illustrated by the heat insulation afforded by the many kinds of cellular brick on the market. Consequently inventors have endeavored to use thin sheets of coal as in the Piron process where they are laid on a conveyor the palettes of which travel over a bed of molten lead.

COAL DUST IS CHARRED

Today the McEwen-Runge process, owned by the International Combustion Engineering Co., is seeking to meet this difficulty with every hope of success by grinding the coal to a dust and by charring it in fluid suspension. Coal dust is readily coked in a mine explosion, though heat is of only momentary duration. It is easy to understand how dust can be charred at a relatively low temperature in a somewhat similar way. A plant for preparing 200 tons of char daily is being constructed at Milwaukee. The char will be used under boilers and the oil from the coal will be drawn off as vapor, condensed, scrubbed and marketed.

The coal will first be broken down in a crusher and passed through a screen. The fine material will then go to a pulverizer and be blown in a pipe to an elevation of about 100 ft. where it will enter a cyclone collector, and be dropped into a hopper from which it will be fed into the "primary" retort which is a big 30-ft. tube or tower of steel, lined with refractory material. This has an internal diameter of 6 ft., 9 in. Here it will come into contact throughout its fall with inert gases which will be fed into the bottom of the tube at a temperature of 600 or 700 deg. F. The gases will lose their heat as they pass upward and finally leave the tube through a pipe in which is placed an exhaustor which will vent them to the air.

The temperature of the gases being at all times low, the coal in this primary or "preheating" retort will drive off only inert gases such as water vapor and carbon dioxide. The

discharge to the air, therefore, will be gas having no thermal value except that of sensible heat. The coal powder will be not in any sense a char but it will be changed in appearance by the process it has undergone. No longer will it be more or less rectangular. It will have become hollow, rounded and opaque.

The heat for this primary retort will be provided by the hot char which is the ultimate product of a "secondary" retort to be described later. This hot char, however, will not be allowed to come in contact with air that it preheats as that would result in its combustion. In the primary retort, as stated, no coking will take place and the product will neither agglomerate nor stick to the side of the retort but fall freely into a hopper below.

Thence it will pass to the secondary or carbonizing retort, which is of 6 ft. internal diameter. Here the product of the primary tube will fall another 30 ft. meeting on its way inert gases which will enter at a temperature of about 1,500 deg. F. and leave at a temperature of about 600 deg., the average temperature being about 1,050 deg. The treatment of the dust in each tube will be completed in about 35 sec. and the whole process will take only 6 min. So rapidly will the conversion to semi-coke be performed that about 200 tons can be obtained in a day's run.

PIPES CONVEY GAS

The gas which passes off the top of this retort will be taken by pipes to a hydraulic main and thence to a gas cooler, a gas exhaustor, a tar extractor, a final cooler, gas scrubbers and a gas holder. Some of this gas may be used for the air preheater of the primary retort thus adding to the heat afforded by the hot char. It also will be used partly to furnish the heat for the secondary retort.

The product can be stored when cooled without fear of firing, and it can be transported in tank cars or wagons or blown direct to boilers for use as pulverized fuel. It can be loaded on locomotive tanks and blown into the furnaces of the locomotives. It can be piped like oil to ships' bunkers and used as pulverized fuel under the boilers. Extensive work in Great Britain is believed to justify the most favorable expectations.

The gas distilled from bituminous coal at low temperatures has a greater heating value than that pro-

duced at high temperatures, the thermal value being approximately 750 B.t.u. The gas has a small percentage of hydrogen and a high percentage of methane hydrocarbons. The gas, therefore, should be suitable for delivery to gas companies, or as a substitute for producer gas, water gas, carburetted water gas or some of the many industrial gases, or it may be used in internal combustion engines or be burned under boilers for power generation. Should the installation be a success seven other like units will be erected at the same location.

PLANT GIVES GOOD SERVICE

A plant that has given excellent service is that designed and operated by C. V. McIntire with Messrs. Coverdale & Colpitts, as consulting engineers. The experimental work has been done by the Consolidation Coal Products Co., a subsidiary of the Consolidation Coal Co. This plant has a low-temperature carbonizing retort which may be classified as a stationary, horizontal, externally heated and internally agitated, furnace of cylindrical form and measuring 16 ft. 3 in. in length and 8 ft. 6 in. in diameter.

In the center of the cylinder is an agitator shaft which oscillates through an arc of 270 deg., and to it are attached paddles which move

through the coal mass, close to the heated surface. These revolve so that the coal is moved every 30 sec. The cylinder is heated so that the surface adjacent to the coal is kept at 1,200 deg. F. a temperature somewhat above that desired for steady carbonizing but such as has been found desirable when the coal is agitated, as described, every 30 sec.

The gases in the retort above the coal are at a temperature between 650 and 750 deg. F., and the coal itself is believed never to reach any higher temperature than 800 deg. except in the periods of short duration in that part of the coal that rests against the high temperature lining.

The lower part of the retort has modified V- or U-shaped grooved sections of specially resistant iron which are fitted together with flanges to break joints. The upper part is a portion of a cylinder and is constructed of light boiler plate protected by sil-o-cel. This can be lifted bodily off the lower half whenever it is necessary to open the cylinder for necessary repairs or cleaning of the retort.

CARBONIZES 50 TONS DAILY

The product is a fine soft coke too fine to use on an ordinary grate. As it reaches the end of the retort it drops into a hopper where it is cooled

by steam but it is found necessary to quench it further with water. Needless to say this char can either be used as a pulverized fuel or made into briquets. About 10 to 12 per cent of volatile matter still remains in the product after it has been subjected to the carbonizing process. With higher temperatures the coke would be harder and more gritty, but that would add to the pulverizing cost. About 50 tons of coal can be carbonized by one of these units in a day.

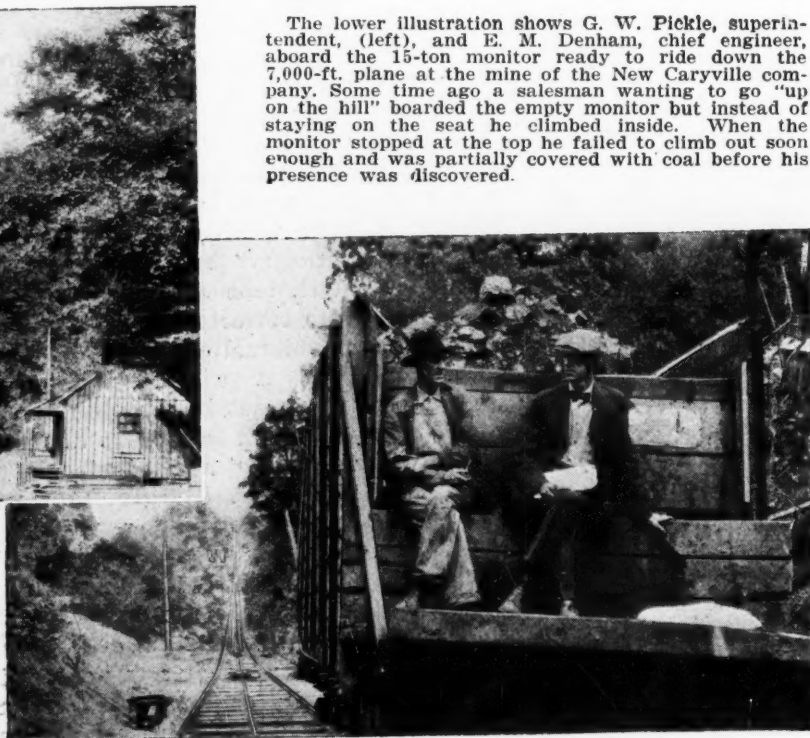
DAILY PROFIT OF \$5,920

Using the high volatile coal of the Fairmont district the process is said to yield per net ton of coal 10 lb. of ammonia as ammonium sulphate, 28 gal. of crude tar, 1,000 cu.ft. of surplus gas and 1,500 lb. of coke. Judson C. Dickerman, assistant director of the Giant Power Survey, whose description has been utilized, states that an 8,000-ton plant after all charges for interest, depreciation and taxes at 15 per cent, on a plant cost of \$800 per ton daily capacity, would yield a profit of \$5,920 per day. He adds that "the prevailing estimates of practically all the low-temperature carbonizing processes are about \$600 investment per ton of daily capacity, against known figures for standard byproduct coke ovens of \$1,800 to \$2,400 per ton."

The New Caryville Coal Co. Secludes Itself in the Hills of Tennessee



Above is shown the steel tippie of the New Caryville Coal Co., Caryville, Tenn. This company is one of seven affiliated with the Southern Mining Co., the main offices of which are at Williamsburg, Ky. It is unusual to see a modern steel tippie in such a shaded nook. Large trees almost surround the structure.



The lower illustration shows G. W. Pickle, superintendent, (left), and E. M. Denham, chief engineer, aboard the 15-ton monitor ready to ride down the 7,000-ft. plane at the mine of the New Caryville company. Some time ago a salesman wanting to go "up on the hill" boarded the empty monitor but instead of staying on the seat he climbed inside. When the monitor stopped at the top he failed to climb out soon enough and was partially covered with coal before his presence was discovered.

New Types of Preparation Equipment Attack Problem of Cleaning in 1925

Dry Cleaning, Sand-Flotation and Launder Separation Make Further Progress—Several Plants Introduce Quicksand Method—Two Breakers Use Rheolaveur

COAL preparation engineers in 1925 showed a disposition to try out various new forms of cleaning equipment, not based on the jigging principle. The most aggressive of the new agents in the coal-cleaning field are the dry-cleaning table, the Chance washer, the Rheolaveur, the Deister table for the larger sizes and the Hydrotator.

Dry-cleaning equipment, as constructed by Roberts & Schaefer Co., has been installed by the Covell Smokeless Coal Co., at Covell, W. Va.; the Gulf Smokeless Coal Co., at Tams and Hotcoal, W. Va.; the Winding Gulf Colliery Co., at Winding Gulf, W. Va.; the Premier Red Ash Co., at Red Ash, Va., and the West Canadian Collieries, Ltd., Blairmore, Alta., Canada. In 1926, it is said a large plant will be constructed for the Algoma Coal & Coke Co., near Northfork, W. Va., and one for the Berwind White Coal Mining Co., at Windber, Pa. This latter will have a capacity of 400 tons per hour.

The West Canadian Collieries plant treats only four sizes $\frac{1}{8}$ in. to $\frac{1}{4}$ in.; $\frac{1}{4}$ in. to $\frac{3}{8}$ in.; $\frac{3}{8}$ in. to $\frac{1}{2}$ in.; $\frac{1}{2}$ in. to $1\frac{1}{2}$ in. Everything below $\frac{1}{8}$ in. and over $1\frac{1}{2}$ in. is not treated. As the smaller of the two untreated sizes constitutes 19 per cent and the

over $1\frac{1}{2}$ -in. 26 per cent of the tonnage, only 55 per cent of the output passes over the tables or 110 tons per hour as against 200 tons of total tonnage.

During the past year the American Coal Cleaning Corp. has made experiments at the Ohio State University and as a result has now a table that will clean coal that passes through a 4-in. bar screen and is retained on a 2-in. square mesh rotary screen and will do it at a cost slightly less than for the smaller sizes and at the rate of 60 tons per hour. At one plant the range of sizes to be treated has been raised to include coal between 2-in. and 3-in. thus making unnecessary the services of four men on the picking table.

DIFFERENT PRINCIPLE INVOLVED

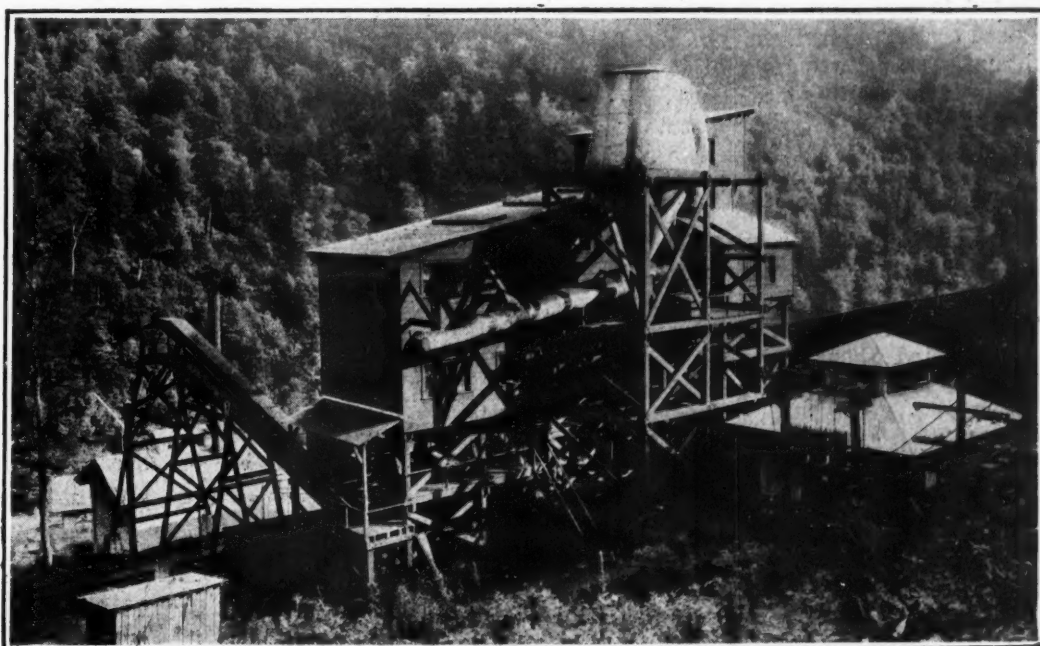
In the older type the coal is separated from the impurities on a single pervious, riffled deck, the impurities which correspond to concentrates in the metal mining being collected on one side and finally discharged from the separator at a point as distant from the feed as the discharge of the clean coal. In the new type the concentrates or impurities are collected in the *central* portion of the deck and the coal discharged on both sides.

As its name implies, the Y-type separator is shaped like the letter Y with the Y set in a horizontal position. The raw coal is fed to it at the base or foot of the Y. This portion contains riffles extending in the general direction of the intersection of the upper portion or arms, and terminating at the central portion which is raised. The sides of the leg of the Y are inclined downward. The arms are practically miniature separating tables, or decks, similar to those constituting the older type separator. The running gear is identical with the older type. The head motion likewise is in the general direction of the riffles.

The coal is received at the base or foot of the Y, the lightest or least dense particles, the upper strata of the mass, is immediately discharged by the force of gravity to either side, and the less dense which then becomes the topmost strata, is discharged farther along the sides of the legs, thus space for more coal is provided and the capacity increased. The heavier or more dense particles, the lower stratum, not having been floated by the air current above the riffles, are retained between them and concentrated in the central portion of the leg of the Y. This portion feeds these lower stratum on to two minia-

Coal Winnowing Plant

The air-cleaning plant of the Covell Smokeless Coal Co. at Covell, Wyoming County, West Virginia. One of the preparation equipments built in 1925. The product is shipped over the Virginian Ry. Much activity in coal cleaning by air has been manifested in Wyoming County, where the early seed planted at McComas has thrived and brought forth abundantly, there being plants at Hotcoal, Tams, Wyco and Winding Gulf as well as at Covell.



ture decks forming the arms of the Y, and they are here treated as on the older type of separator. Here what takes place may be termed a recleaning operation for that portion of the product which requires it. The area of discharge of this separator is twice that of the older type, thereby permitting a stream of coal twice the size to be discharged from it in a given time. The coal is retained on the separator only a sufficient length of time to separate it from the impurity after which it is immediately discharged. In addition to separating the impurities from the coal due to an improved system of air baffles and control, the unit also grades the coal into sizes. In other words, the finer sizes are treated and disposed of first and the cleaning operation continued with a steadily increasing sizes toward the intersection of the arms of the Y. This feature has permitted a range of sizes 100 per cent greater than that formerly thought possible.

As a result of these changes the new separator is said to have twice the capacity of the old and to reduce the necessity of fine sizing to an important degree. Aspirators have also been developed to permit the successful sizing of fine coals passing the $\frac{1}{8}$ -in. screens. It is claimed that the floor space and the height formerly required have both been reduced and the dust-collecting system has been made less extensive. Less middlings are produced and the charges for investment, power, labor and supplies have been decreased.

REDUCES ASH 45 PER CENT

The McComas plant, of the American Coal Co. of Allegany County, has put in aspirators so as to obtain a sized coal running from $\frac{1}{8}$ to $\frac{1}{4}$ in. Obtaining an ash reduction of 45 per cent by cleaning this coal it was decided that five Y-type separators should be installed, that the two old separators treating the $\frac{1}{8}$ to $\frac{1}{4}$ in. size should be removed, as also the $\frac{1}{8}$ -in. screens or about one-third of the entire screening equipment of the plant. These can be used at another installation. These changes will be completed about Feb. 15. The sizes treated will be 3 to $1\frac{1}{2}$ in.; $1\frac{1}{2}$ to 1 in.; 1 to $\frac{1}{2}$ in.; $\frac{1}{2}$ to $\frac{1}{4}$ in.; $\frac{1}{4}$ to $\frac{1}{8}$ in.; $\frac{1}{8}$ to $\frac{1}{16}$ in., and $\frac{1}{16}$ to 0 in. (aspirated). The capacity will be 275 tons per hour.

A dry concentrating plant is being erected for the International Coal & Coke Co., at Coleman, Alta, Canada, having a capacity of 300

tons passing the 3-in. screens. The sizes, 3 to $1\frac{1}{2}$ in.; $1\frac{1}{2}$ to $\frac{1}{2}$ in., and $\frac{1}{2}$ to $\frac{1}{8}$ in. will be treated on the older type of pneumatic separators and the $\frac{1}{8}$ to $1\frac{1}{2}$ in. and the through $\frac{1}{8}$ in. will be treated on the new Y type.

The Birtley Iron Co., Birtley, County Durham, England, is erecting a plant at the Wardley Collieries which will screen to five sizes and treat 150 tons hourly pneumatically, only the coal under one inch being subjected to the pneumatic separators of which there are six. Prior to this it had erected a similar plant at Heworth Collieries screening the coal into three sizes and using only coal under one inch. Four pneumatic separators were used. The Premier Red Ash Corp., at Red Ash, Va., has put in a separator to treat nut sizes (2 to 1 in.).

SAND FLOTATION PROGRESSES

The Chance process has made much progress during 1925. Sand flotation has been applied successfully to the washing of bituminous coal, the first plant of that type being placed in operation on Oct. 1. It shipped over 150,000 tons in the three months following. The patentees claim that the yield of coal of prepared sizes has been demonstrated in plants located in the southern anthracite field and that a mixture of buckwheat, rice and barley can be washed in a separate cone to produce steam coal of any desired ash content without change in the preparation standards of the domestic sizes. This method has been adopted at four of the plants erected.

It is stated that the process will produce uniformly low-ash coal in machines of high capacity without loss of pure coal in the refuse. Where the coal is boney or laminated the larger refuse can be and has been crushed, thus releasing the coal from the interlaminated slate so that it can be rewashed in a separate, or in

the original, cone. The refuse from two cones can be handled by a common conveyor and slate shaker. The sand sumps and de-sanding shakers have been redesigned so as to reduce sand losses to a minimum, the loss in the case of bituminous-coal cleaning being reduced to less than 2 lb. of sand per ton of coal, according to the patentees. A list of such sand-flotation plants is given in the accompanying table.

The construction of Rheolaveurs during 1925 at no American plant reached a stage making operation possible except at one plant of the Hudson Coal Co. where, it is said, coal has been washed by this process. The Glen Alden Coal Co. during the latter part of the year commenced the reconstruction of its Loomis breaker, but this work has been delayed by the strike. A 3,000-ton Rheolaveur unit is being erected and as soon as this unit is in successful operation another of equal size will be added, thus entirely replacing the original equipment.

At the Hazleton shaft of the Lehigh Valley Coal Co. a unit capable of cleaning 2,000 tons in 8 hr. is under construction. Other plants which, it is said, will be erected in 1926 are those of the Montevallo Coal Co., at Aldrich, Ala. and of the American Smelting & Refining Co., at Cokedale, Colo., both bituminous plants.

Experiments have been made at coal mines with the Hydrotator, a settling tank in which the solids are kept sufficiently in motion for stratification by revolving water jets. Trials of the availability of the process for coal washing have been made at the Oak Hill Colliery, Minersville, Pa., and at a mine in Alabama. Developments in other industrial fields have been quite active, however.

Concentrating tables have, hitherto, been used only for the cleaning of small sizes from $\frac{1}{8}$ in. to dust.

Sand Flotation Plant Construction During Year 1925

Plants Erected	Type	Cones Installed		Sizes Washed
<i>Anthracite</i>		Ft.	In.	
Madeira, Hill & Co.....	Breaker	4	— 13 6	Broken to barley (incl.)
St. Clair Coal Co.....	Breaker	3	— 13 6	Egg to barley (incl.)
Repplier Coal Co.....	Breaker	2	— 13 6	Egg to barley (incl.)
Northumberland Mining Co.	Breaker	2	— 13 6	Egg to barley (incl.)
Shamokin Coal Co.....	Breaker	2	— 12 0	Egg to barley (incl.)
South Penn Colliery Co.....	Breaker	2	— 7 8	Egg to barley (incl.)
Winton Coal Co.....	Breaker	1	— 15 0	Egg to barley (incl.)
Moosic Coal Co.....	Breaker	1	— 15 0	Egg to barley (incl.)
Suffolk Ant. Colliery Co.....	Washery	1	— 15 0	Egg to barley (incl.)
Harleigh Coal Co.....	Washery	1	— 15 0	Stove to barley (incl.)
Coleraine Coal Co.....	Washery	1	— 13 6	Stove to barley (incl.)
John Ames Coal Co.....	Washery	1	— 13 6	Stove to barley (incl.)
Hickory Run Coal Co.....	Washery	2	— 12 0	Stove to barley (incl.)

The hourly capacity in output of clean coal is usually rated when operating on coal containing not more than 25 per cent of refuse, as follows:

Diameter of Cone, Ft.	Tons per Hour	Diameter of Cone, Ft.	Tons per Hour
7.5	50	13.5	125
12	100	15	150

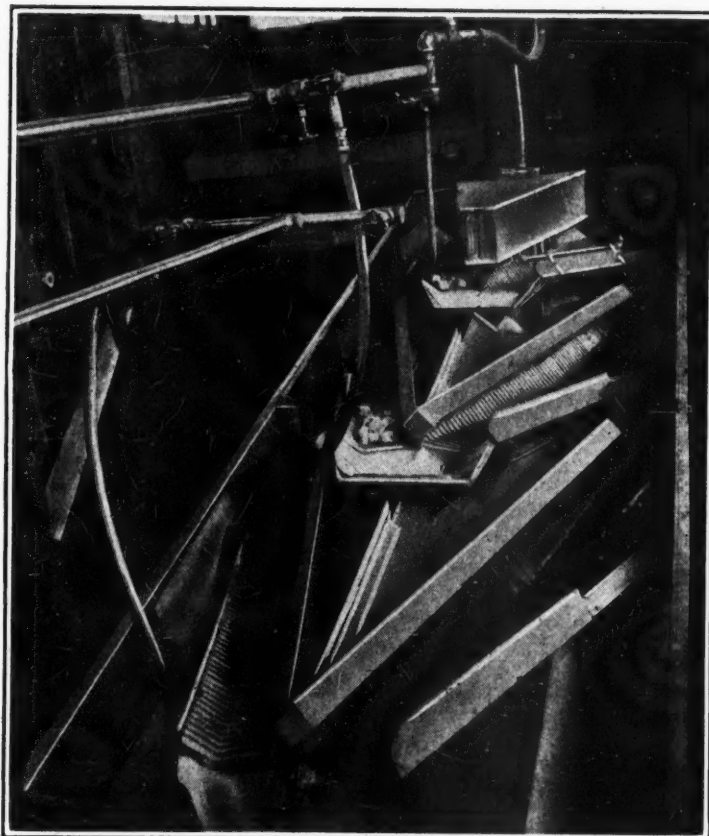


Table for Washing Coarser Sizes

It has always been assumed that tables were only suited to coal of sand size. This table washes nut-sized coal, and, it is said, does it effectively.

The larger sizes have been cleaned either by jigs, by dry methods of mechanical concentration or by hand picking. The Plat-O coal washer has in the past year been devised to clean large coal and to do it in full view of the operative.

SIX LAUNDERS EMPLOYED

The washing operation is carried on in six launders, three on a side, set at an angle to the center line of the machine, which is also in the line of motion. These launders have an upward inclination of $1\frac{1}{2}$ in. per foot, with the exception of the last 15 in. at the refuse discharge end of each launder where this inclination is increased to $1\frac{1}{2}$ in. per foot.

The deck of the machine is supported and operated on dust-proof, self-oiling slipper bearings and is reciprocated by a self-oiling head-motion similar to that used for tables of this type in the preparation of fine coal.

The decks of these machines are constructed throughout of cypress, and lined with heavy linoleum similar to that used as deck covers on coal and ore tables. All portions of the interior of the washer subject to wear are covered with heavy rubber.

That on the washing launders is corrugated, the corrugations running transverse to the forward travel of the refuse. The corrugations are of the saw-tooth type with a long, easy slope in the direction of the travel of the material and a short, abrupt shoulder. These saw-teeth facilitate a rapid advance of the refuse, the steep upward slope of the washing launders holding back the clean coal. Wash water boxes, launders, and spray pipes are provided for supplying the necessary water for the washing of the coal.

The washer deck is reciprocated at a speed of 135 to 140 r.p.m. with a length of stroke of $2\frac{1}{2}$ in. The feed is delivered to the machine at the head end, or highest point, just back of the triangular wash-water box. The tendency of the material being washed is to travel in a direction parallel to the line of motion, but due to the angularity of the launders to this direction of travel the solids are given a circular or panning motion and the water a pulsating or jiggling action.

After the coal has been washed in the first or upper set of launders it is rewashed in the second and third sets. In the first launders a large

portion of the heaviest and coarsest of the refuse is removed together with a small portion of the lighter slate. In the second launders but little of the heavy refuse is left, while in the third launders the final washing has practically nothing to remove but slate and bone coal.

The refuse from each of the launder operations passes off at the forward ends of the washing launders through openings leading to the general refuse launder running along under the center of the deck. The clean coal is discharged on each side of the machine at the lower end.

The washed material as it passes from one launder to the next flows over a short length of brass screen which drains off the water into the adjacent wash-water box where it is used in the washing of the same coal. Fresh water may be added from spray pipes on the edge of the washing launders or driven up through screen-covered openings so that it passes through the bed of the refuse as it moves up the slope.

WASHES 15 TONS HOURLY

The capacity of the washer is approximately 15 tons per hour, and the wash-water requirements are 400 gal. ($1\frac{1}{2}$ tons) of water per ton of coal treated. For continuous operation 2 hp. is required. If an individual motor drive is used a 3-hp. motor should be supplied for the purpose. The washer is in over-all dimensions 5 ft. 3 in. wide, 16 ft. $6\frac{1}{2}$ in. long and 5 ft. $9\frac{1}{2}$ in. high to the top of the wash-water box. One of these washers has been operating at the plant of the Potter Coal & Coke Co. at Greensburg, Pa. Others are to be or have been installed in the Donetz coal field in Russia.

Concentrating tables for fine coal made further headway in 1925. The Lehigh Coal & Navigation Co. installing thirty Deister Concentrator Co.'s units at its new Lansford breaker, twelve of these having rubber deck-covers and riffles of molded rubber. They will be used for the treatment of buckwheat Nos. 1 and 2. An installation was made by the same company for the American Smelting and Refining Co., at Rosita, Mex. Vibrating screens are entering the Eastern fields, despite the greater dampness of the Eastern coals. Such screens have been installed for the Alabama Coal Corp., the De Bardeleben Coal Corp., at Empire, Ala., and the Alabama Fuel Co., at Overton, Ala.

MARKET REVIEWS

Markets and Production in 1925 and Forecasts by Our Correspondents in Leading Coal Fields—Diagrams and Tables of Spot and Weighted Average Prices of Coal by Producing Districts

Midwest Market Had Quiet Year; Northwest Docks Regain Lost Ground

Except on Eastern Coals, Price Spread Is Narrow
—Sharp Advance in Smokeless Sends Consumers
Back to Midwest Coals—Labor Problem Is Vexing

By H. A. Requa

The year just closed was an uneventful period in the coal industry of the Middle West and Northwest. There was less spread in prices last year, perhaps than ever before, though some outside coals did fluctuate, which will be referred to later. But considering local coals—from Illinois, Indiana and west Kentucky—the twelve-month period showed little variation. This is true of both steam and domestic coal. Much the same situation prevailed at the coal docks on Lake Superior and Lake Michigan, where dock operators were engaged over the year in battling for their old markets against the inroads of all-rail coal from West Virginia and Kentucky. Eastern coals moving into the Middle West had frequent ups and downs, but as the Middle West is primarily interested in its own coals these variations did not cut such a tremendous figure.

Anthracite cut but little figure in the Midwest and Northwest market last year, principally because those interested in this fuel made their purchases early in the season while hard coal was plentiful. The docks still have large reserves, which they are selling, as the demand occasions, at reasonable prices. Some retail dealers also have some left, which they are holding for pet customers.

Right after the first of the year business was brisk and prices were firm, largely due to a spell of very cold weather all over the Middle Western and Northwestern states. About the middle of January the weather moderated, and the market tapered off until the latter part of February, when more cold weather brought a little impermanent relief. From then on until in April the market was uniformly poor.

After the first of May business picked up a little, owing to improved industrial conditions. Business lagged during the summer until late in August. About that time the public began to think there might be something to the anthracite strike talk, after all, and it might be a good idea to buy the family and factory coal supply for the winter. A much better market resulted, and from then on prices and production figures began gradually to climb. In

October and November prices reached the top for the year, but tonnage figures kept on climbing. Indiana, Illinois and western Kentucky mines produced record tonnages, and many a dock company at the head of Lake Superior wired to Toledo or Cleveland for an extra cargo or so of coal.

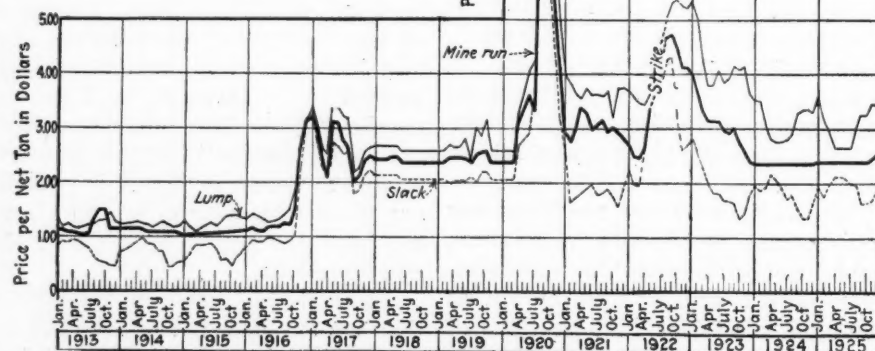
During the late fall and early winter months prices were at their best, but there was no runaway market on account of the anthracite strike, which surprised many engaged in the coal industry. They did not take into consideration that coal was being produced in such great quantities that a fuel shortage was impossible. The end of the year saw the Middle West and Northwest so full of coal that operators, in order to maintain their prices, were faced with the necessity of cur-

tailing production sharply, and this, like wise men and sound merchants, they did. The end of the year saw the temperature over the whole territory around zero, but with adequate coal supplies at a very reasonable price available everywhere.

Normally a large annual tonnage of smokeless coal moves to the Middle West and Northwest, very much to the disgust of Midwest mine operators, who feel the market belongs to them. Last fall, on account of a real or fancied fuel shortage in New England, the smokeless people shipped their coal East and either utterly abandoned their friends of years standing in the Middle West or else charged them around \$6.50 f.o.b. mine for prepared smokeless coals, although this same coal had been selling all spring and summer at prices ranging from \$2.75 to \$3.50. The Middle West was prepared to pay some advance on account of the hard-coal situation, but a boost of \$3 per ton or more seemed a little unreasonable to them, especially as the Illinois, Indiana and west Kentucky producers kept their prices steady, with increases, if at all, not greater than 25c. or 50c. per ton. The dock operators, too, were farsighted enough to keep their prices down on all grades of smokeless coals. Much to the joy of Midwest operators, countless buyers gave up trying to purchase smokeless coals and came back to the local product. There is no doubt about it, the smokeless advance in price cost West Virginia many a good account. It is the opinion of disinterested observers that the smokeless people

Spot Prices, F.o.b. Mines, Southern Illinois (Franklin County) Coal, 1925

CHICAGO MARKET				
Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January.....	\$3.57	\$2.38	\$1.93	\$2.87
February.....	3.19	2.38	1.75	2.65
March.....	2.95	2.38	1.99	2.58
April.....	2.63	2.38	2.13	2.45
May.....	2.63	2.38	2.13	2.45
June.....	2.63	2.38	2.10	2.45
July.....	2.63	2.38	2.00	2.43
August.....	2.98	2.38	1.97	2.59
September.....	3.25	2.38	1.63	2.66
October.....	3.25	2.38	1.63	2.66
November.....	3.45	2.43	1.67	2.78
December.....	3.44	2.50	1.88	2.84
Yearly average..	3.05	2.39	1.90	2.62



Spot Prices, F.o.b. Mines, on the Chicago Market, of Coal from Southern Illinois

Spot Prices, F.o.b. Mines, of Central Illinois Coal, 1925

CHICAGO MARKET

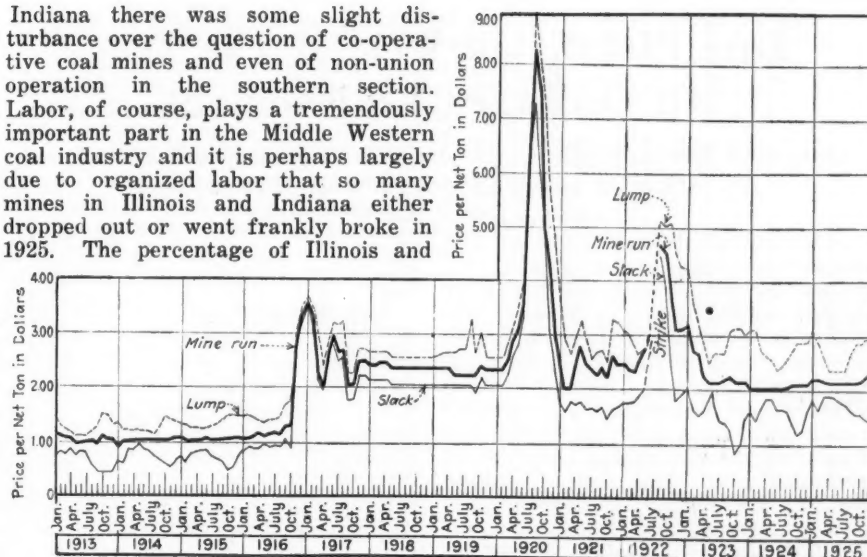
Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January.....	\$3.10	\$2.20	\$1.82	\$2.56
February.....	2.88	2.20	1.63	2.42
March.....	2.60	2.15	1.90	2.32
April.....	2.38	2.13	1.90	2.20
May.....	2.38	2.13	1.88	2.20
June.....	2.38	2.13	1.80	2.18
July.....	2.38	2.13	1.74	2.17
August.....	2.68	2.13	1.61	2.30
September.....	2.88	2.13	1.55	2.38
October.....	2.88	2.15	1.55	2.39
November.....	2.95	2.23	1.48	2.44
December.....	2.94	2.30	1.43	2.45
Yearly average..	2.70	2.17	1.69	2.33

will have to spend much sales energy before they begin to get back the accounts they have lost, especially as Middle Western operators are more closely in touch with the trade and intend to bend every effort to keep the business they have regained.

Dock operators, thanks to their aggressive efforts and business sagacity, have had a good year. In obtaining supplies for their docks last year they bought, as a rule, quality coal and gave it careful and excellent preparation. Comparatively speaking, dock prices have been very low, with the result that dock operators have won back in a large measure the business they had lost during the past three years to all-rail coal. Another consideration in favor of the dock operators has been the fairly prosperous condition of the territory they serve. For instance, the agricultural situation in Wisconsin, Minnesota, South Dakota and North Dakota has been good. The paper and pulp mills have run nearly every day, and business in the iron-ore districts has been brisk. Taken all in all, 1925 has doubtless proved a satisfactory season for the coal docks.

From a labor viewpoint, 1925 has been quiet. There was, to be sure, a little flurry in Illinois over the wages to be paid to the crews handling mechanical coal loading devices, and in

Indiana there was some slight disturbance over the question of co-operative coal mines and even of non-union operation in the southern section. Labor, of course, plays a tremendously important part in the Middle Western coal industry and it is perhaps largely due to organized labor that so many mines in Illinois and Indiana either dropped out or went frankly broke in 1925. The percentage of Illinois and



Spot Prices, F.o.b. Mines, on the Chicago Market, of Bituminous Coal from Central Illinois

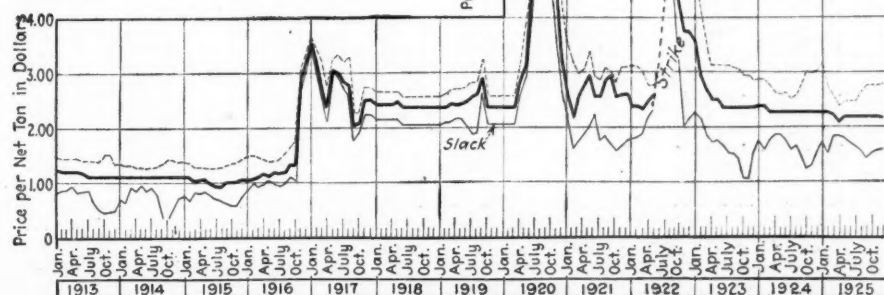
Indiana mines that can actually show an operating profit for 1925 is negligible. This is entirely due to the labor situation, as it can hardly be expected that an Illinois coal mine paying a union miner, say \$8 per day for certain work can compete with a Kentucky mine paying a non-union miner only \$4 per day for the same class of work. Therefore Illinois and Indiana operators cannot possibly hope for an even break against Kentucky and West Virginia producers until these differences are adjusted.

As the Jacksonville agreement with the United States Mine Workers does not expire until April, 1927, it is expected that the Middle West mine operators, such of them as remain, will devote 1926 to setting the stage for the "big show" next year, when the marshaled forces of organized labor will meet with the inexorable forces of supply and demand. In the meantime, operators are waiting for some Moses to come and lead them out of the wilderness of their difficulties, or maybe it would be more fitting to say they are waiting for a super Babe Ruth to spring up and put in a few good, wholesome swats for them. They don't need any Colonel Mitchell to tell them there's something wrong, either.

Spot Prices, F.o.b. Mines, of Indiana, 4th and 5th Vein Coals, 1925

CHICAGO MARKET

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January.....	\$3.16	\$2.25	\$1.72	\$2.50
February.....	2.75	2.25	1.51	2.29
March.....	2.57	2.21	1.84	2.27
April.....	2.38	2.09	1.83	2.16
May.....	2.45	2.18	1.80	2.21
June.....	2.45	2.18	1.71	2.19
July.....	2.45	2.18	1.66	2.18
August.....	2.63	2.18	1.57	2.23
September.....	2.75	2.18	1.43	2.26
October.....	2.75	2.18	1.53	2.28
November.....	2.75	2.18	1.59	2.29
December.....	2.78	2.16	1.60	2.30
Yearly average..	2.66	2.18	1.65	2.28



Spot Prices, F.o.b. Mines, on Chicago Market, of Bituminous Coal from Fourth and Fifth Veins, Indiana

Northwest Coal Dock Business Above Average in 1925

Coal receipts at Duluth-Superior docks during the 1925 season showed an increase of 651,829 tons over 1924 and were 104,108 tons above the average for the past eight years, according to the U. S. Harbor Engineer's office at Duluth.

Bituminous receipts last season totaled 8,882,569 tons, an increase of 1,151,691 tons over the 1924 figures. Anthracite receipts came to 790,132 tons, a decrease of 491,862 tons as compared with the previous season.

Receipts of coal by months during the 1925 season were as follows, in net tons:

	Hard Coal	Soft Coal	Total
April.....	171,372	550,014	721,386
May.....	214,006	1,026,333	1,240,339
June.....	151,939	1,295,190	1,447,129
July.....	139,992	1,362,574	1,501,866
August.....	51,636	1,243,053	1,294,689
September.....	51,603	968,658	1,020,261
October.....		1,242,816	1,242,816
November.....	3,284	976,978	980,262
Total for season	790,132	8,882,569	9,672,701

Comparative statement at close of season for past eight years:

	Hard Coal	Soft Coal	Total
1918.....	1,609,473	9,721,440	11,890,913
1919.....	1,795,257	7,079,840	8,875,097
1920.....	1,637,477	7,393,219	9,030,696
1921.....	1,844,642	8,320,207	10,164,849
1922.....	566,362	5,138,934	5,705,296
1923.....	1,419,984	11,268,337	12,688,321
1924.....	1,289,994	7,730,878	9,020,872
1925.....	790,132	8,882,569	9,672,701

Average total received during the past eight years 9,568,593.

Comparative shipments from Duluth-Superior coal docks during the calendar years 1925, 1924 and 1923, as compiled by the Western Weighing and Inspection Bureau, were as follows, in carloads:

	1925	1924	1923
January.....	27,693	25,984	13,683
February.....	17,666	17,188	13,969
March.....	16,388	13,619	10,826
April.....	9,210	15,683	7,555
May.....	12,302	13,728	7,964
June.....	11,955	13,401	15,157
July.....	14,693	15,301	18,911
August.....	20,778	18,589	23,914
September.....	24,032	24,373	23,174
October.....	31,685	26,418	23,436
November.....	27,411	28,705	23,699
December.....	25,735	29,615	17,215
Total.....	239,548	242,604	199,503

Late Pick-Up in West Marks Year Of Ordinary Achievement

Output in Kansas Higher Than in 1924, Colorado About the Same,
but Arkansas and Oklahoma Slump, Due to Labor
Trouble—Lower Costs Sought

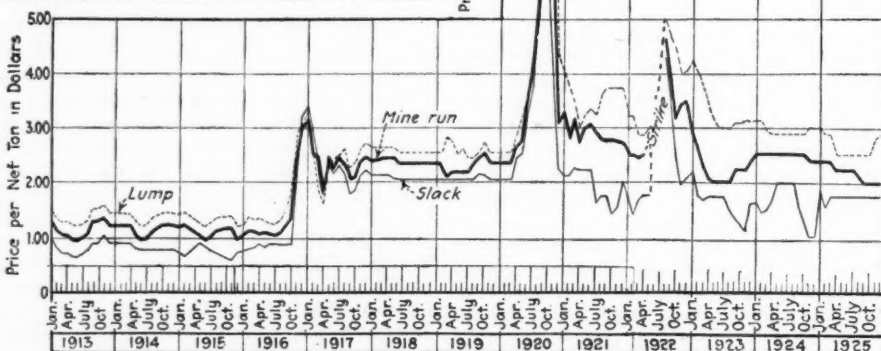
Just an ordinary year fittingly describes the developments of 1925 in the market regions served by Western and Southwestern mines. Output in Kansas, according to unofficial figures from authoritative sources, reached about 6,000,000 tons (which is about 1,500,000 tons more than in 1924) and Colorado's total just about equaled that of the preceding year. The increase in Kansas was due largely to reduced production in Arkansas and Oklahoma, where labor difficulties curtailed operations. Prices at the year's end were not far from the levels prevailing at the outset, and except for pronounced dips during the spring the market was without notable features.

Several cold spells last January rescued the market from the doldrums, but business dragged in February and the first break in the \$5 price for Kansas lump took place March 1, when shaft lump was quoted at \$4.50. By the middle of that month it was down to \$4, with shading of from 50c. to 75c. as April approached. Except for a fleeting flurry due to cool weather late in April the market was sluggish until late August, when fall demand began to appear and prices advanced slowly until Kansas lump again reached the \$5 level about Nov. 1. The fall and winter demand thus far has been spasmodic, dependent on the thermometer, and purchases have largely been only for immediate needs.

In Utah prices were unusually steady throughout the year, rumors of an advance to encourage summer storage having come to naught. Working time was down to two days a week from May until September, when conditions began to improve with the early appearance of fall weather. The late fall and early winter were unusually mild, however, and at the year's end the

mines were averaging only half time or less.

Colorado lump and nut, which at the beginning of last year were \$5.25 and \$4.25 respectively, with a stiff cold spell prevailing, fell away badly in April, which was—until then—one of the worst months in the history of that market, but by June business had almost dropped out of sight. All consumers, apparently, were holding back until freight rate reductions became effective—early in August. The real pick-up began about the middle of the latter month and orders soon were com-



Spot Prices, F.o.b. Mines, on the St. Louis Market, of Coal from
Mt. Olive District of Illinois

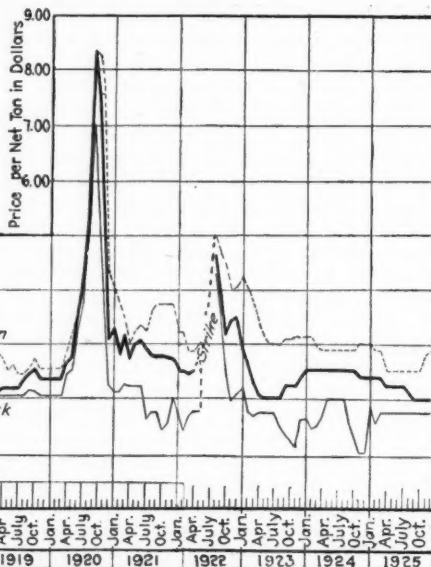
ing in strong and from a much broader stretch of territory than usual, yet prices advanced only moderately, reaching \$6 for lump and \$5 for nut on Nov. 1, since which date there has been no change.

One of the most beneficial developments in the Colorado trade during the last year was a revision in the miners' wages, the workers agreeing to return to the 1917 scale, which is about 33 per cent less than the Jacksonville scale. Much dissatisfaction came to light

Spot Prices, F.o.b. Mines, Coals of Mt.
Olive District, (Ill.), 1925

ST. LOUIS MARKET

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January.....	\$3.00	\$2.38	\$1.83	\$2.58
February.....	2.88	2.38	1.57	2.47
March.....	2.88	2.38	1.75	2.51
April.....	2.50	2.25	1.75	2.29
May.....	2.50	2.25	1.75	2.29
June.....	2.50	2.25	1.75	2.29
July.....	2.50	2.25	1.75	2.29
August.....	2.50	2.10	1.75	2.24
September.....	2.50	2.00	1.75	2.20
October.....	2.50	2.00	1.75	2.20
November.....	2.80	2.00	1.75	2.34
December.....	2.88	2.00	1.75	2.38
Yearly average..	2.66	2.19	1.74	2.34



when an attempt was made to introduce drastic changes in the mining laws in an effort to standardize practice, but the difficulty eventually was ironed out when the most objectionable features of the proposed changes were eliminated by a compromise between the operators and the chief mine inspector.

Oklahoma and Arkansas mines had a hard time throughout the greater part of the year, production being so restricted and uncertain as to have little effect on market conditions. The

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season of 1925

(In Net Tons)

Ports	Railroads	Cargo	1925 Fuel	Total	Cargo	1924 Fuel	Total	Cargo	1923 Fuel	Total
Toledo....	Hocking Valley.....	*8,234,057	239,377	8,473,434	6,714,573	199,104	6,913,677	5,026,533	151,965	5,178,498
	Big Four.....	1,542,343	9,398	1,551,741	57,298	138	57,436			
	N. Y. C.-Ohio Central Lines	1,016,892	74,669	1,091,561	145,012	5,425	150,437	1,182,193	36,966	1,219,159
	Baltimore & Ohio.....	*3,219,638	96,902	3,316,540	2,256,187	69,919	2,326,106	2,891,967	84,402	2,976,369
Sandusky....	Pennsylvania.....	6,122,103	183,699	6,305,802	4,205,493	126,145	4,331,638	3,008,096	95,726	3,103,822
	Wheeling & Lake Erie.....	703,627	36,721	740,348	800,037	36,933	836,970	1,481,428	58,439	1,539,867
Lorain.....	Baltimore & Ohio.....	†1,588,520	156,970	1,745,490	2,227,761	158,610	2,386,371	3,667,957	196,569	3,864,526
	Pennsylvania.....	390,050	172,653	562,703	1,414,865	176,709	1,591,574	1,870,527	201,470	2,071,997
Cleveland..	Erie.....	18,138	1,252	19,390	327,720	11,336	339,056	739,025	31,920	770,945
	Baltimore & Ohio.....	*969,013	114,520	1,083,533	556,243	84,556	640,799	912,131	82,236	994,367
Fairport....	New York Central.....	331,047	83,397	414,444	871,569	113,659	985,228	3,380,040	255,746	3,635,786
	Pennsylvania.....	786,745	88,032	874,777	1,195,466	79,607	1,275,073	2,147,144	94,482	2,241,626
Ashtabula..	Bessemer & Lake Erie.....	1,124,109	214,425	1,338,534	1,514,457	198,039	1,712,496	2,785,640	242,057	3,025,697
	Pennsylvania.....	284,561	60,138	344,699	688,310	87,381	775,691	738,103	96,532	834,635
Total.....		*26,330,843	1,532,153	27,862,996	22,974,991	1,347,561	24,322,552	29,828,784	1,628,510	31,457,294
Storage Loading.....		†33,017	1,048	34,065	†182,060	4,940	187,000			

*Storage coal (included in above figures), H. V., Toledo, 49,425 tons; B. & O., Toledo, 2,842 tons; B. & O., Fairport, 7,875 tons

†Includes 42,005 tons cargo; 2,798 tons fuel dumped at Huron account fire at Lorain, June 12, 1925. Also includes 3,631 tons fuel dumped over ore docks at Lorain.

‡Coal loaded into vessels in December, 1924, after close of navigation and forwarded from Lake Erie ports during 1924.

§Coal loaded into vessels in December, 1923, after close of navigation and forwarded from Lake Erie ports during 1925.

Compiled by Ore & Coal Exchange, Cleveland; H. M. Griggs, manager.

McAlester (Okla.) field began early in the year to slide from the 1924 scale, followed soon by the Wilburton, Harts-horne and Henryetta fields. The defection of the first three did not create much of a stir, but when Henryetta left the fold the union began active opposition. After several clashes between union and non-union men the Governor sent national guardsmen into the district to maintain order. When, in August, the Arkansas mines also began to slip the union leaders called a strike in District 21, embracing both states, effective Sept. 1. The response was almost unanimous, but many of the men later returned to work. Nevertheless, as the year came to a close the output of the two states was far below normal and the strike was still in effect.

Efforts to extend the 1917 scale into Kansas were met with prompt and vigorous opposition by union men, and with the state benefiting from trade formerly supplied by Oklahoma and Arkansas, new mines were opened in the autumn and some operations that had been idle since 1921 or 1922 resumed. Leon Besson, state inspector, announced in November that 100 more mines were operating than at the same time in the preceding year. Most of these are shovel mines, which incidentally, are said to be yielding bigger profits than shaft mines.

Early in December it was stated that a commission had been directed by John L. Lewis, president of the international union, to investigate conditions in the Southwest, and there were rumors that a general strike might be called in furtherance of the union cause in District 21, but Kansas operators incline to the belief that the strike will not materialize.

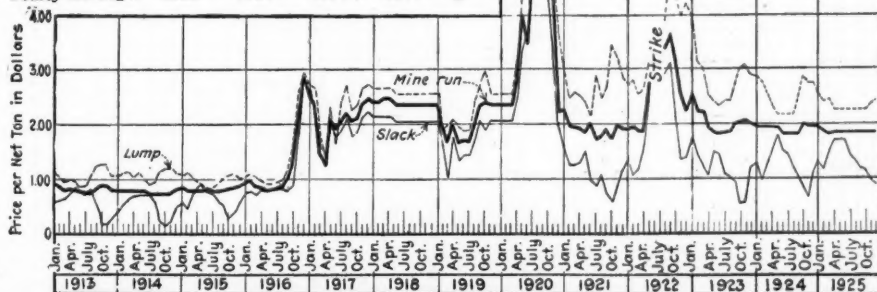
In Missouri, with no strike, high operating costs have curtailed production to such an extent that the state's influence is negligible.

Operators still decry high production costs due to high wages, and look for little relief while the Jacksonville agreement remains in force.

Spot Prices, F.o.b. Mines, Coal of Standard District (Ill.), 1925

ST. LOUIS MARKET

Month	Lump	Run of Mine	Screen-ings	Weighted Av. All Sizes
January.....	\$2.58	\$1.95	\$1.30	\$2.13
February.....	2.41	1.88	1.18	2.00
March.....	2.45	1.80	1.53	2.06
April.....	2.25	1.83	1.70	2.01
May.....	2.25	1.83	1.70	2.01
June.....	2.25	1.83	1.70	2.01
July.....	2.25	1.83	1.41	1.95
August.....	2.25	1.83	1.31	1.93
September.....	2.25	1.83	1.19	1.92
October.....	2.25	1.83	1.15	1.91
November.....	2.36	1.83	.99	1.93
December.....	2.43	1.83	.88	1.95
Yearly average.	2.33	1.84	1.34	1.99



Spot Prices, F.o.b. Mines, on the St. Louis Market, of Coal from the Standard Field of Illinois

Cincinnati Market Has Year of Thrills

Start Is Quiet but Hectic Movement Follows—New Freight Traffic Record Set—West Virginia Coals Active—Southeast Kentucky Prices Hold Their Own

By Harold W. Coates

Almost all of the thrills that can be experienced in a coal man's year are written into the chronicle of 1925 so far as the Cincinnati market is concerned.

December of the year preceding (1924) had been rather fitful and hectic, but, following the shutdowns and slack time over the holidays 1925 dawned with a marked right-about-face. For a week or two it looked as if equilibrium would be recovered. Distress coal was cleaned up and "no bills" in the Russell, Stevens and De Coursey yards in Kentucky and at Portsmouth, Ohio, virtually disappeared.

Nobody, however, kept an eye on the barometer. Production in the non-union fields went on apace and by the time February rolled around many of the mines were balancing in red and the wholesalers here were cramped into a position where no one could make any money. Even zero weather failed to help. Prices were soft and crumbling in every direction. Slack was hardest to move and the low spot of the year, 65c. a ton, was reached here.

Overproduction Bare

The next sixty days witnessed all sorts of attempts to curb the overplus of coal. Most operators expected the other fellow to apply the remedy and kept their own mines working. Again the reservoirs were filled with "no bills" and consigned coal and the situation by April 1 resulted in loaded equipment being backed clear to the mouths of the mines of southern West Virginia and southeastern Kentucky.

May saw the situation still in bad shape with overproduction the bugaboo. The general idea was that the opening of the lakes might change the situation. Hazard operators declared against ruinous prices and placed their coal on a basis by which it would be advanced 15c. a ton each month until the opening of the fall business. Railway contracts for straight mine-run let in this period at \$1.50@\$1.60 in Kentucky and 10c. @

15c. higher in West Virginia helped to give a little body to the market. Lake movement also added its influence, so that when the first rumble of trouble in the ranks of the English miners was carried to this market there was enough momentum already started to carry the values to a slightly higher and more satisfactory level.

Anthracite Strike Helps

In July, when the word came that the hard-coal miners intended to take a "vacation," the first firm ground for business of the year appeared. August saw the first of the fencing around to get under cover and an assured supply

Spot Prices, F.o.b. Mines, Southern West Virginia Smokeless Run-of-Mine Coal, 1925

VARIOUS MARKETS

Month	Colum-bus	Chicago	Cincinnati	Boston	Average All Markets
January....	\$1.93	\$1.97	\$2.06	\$1.56	\$1.88
February....	1.93	1.60	1.94	1.68	1.79
March.....	1.93	1.75	1.98	1.65	1.83
April.....	1.89	1.91	2.00	1.59	1.85
May.....	1.88	1.90	2.00	1.53	1.83
June.....	1.88	1.93	1.93	1.56	1.83
July.....	1.88	1.92	1.99	1.58	1.84
August.....	1.99	2.17	2.29	1.79	2.07
September..	2.56	2.47	2.53	2.49	2.52
October....	2.56	2.16	2.44	1.96	2.28
November..	2.83	2.45	2.46	2.31	2.51
December..	2.89	2.27	2.43	2.29	2.47
Yearly av..	2.18	2.04	2.17	1.83	2.06

on the part of the big industries, and this helped the situation tremendously.

For the first half of the year there had been a tremendous "weeding out" process so far as the wholesale trade of Cincinnati was concerned. Several of the smaller firms that could not stand the gaff of a long pull against the current gave up the ghost. Consolidations put others out of the running. By midsummer the Florida lure caught others and the local coal trade contributed several who joined the "gold rush" to the South.

When September rolled around the stocks at the head of the lakes were moving out from the docks at such a rate that lake buyers became a large factor to this market. Production was on in full blast and week after week all records for the volume of loaded cars passing through the Cincinnati gateway were broken until in October over 16,000 cars—3,350 destined for the lakes—moved through in one week.

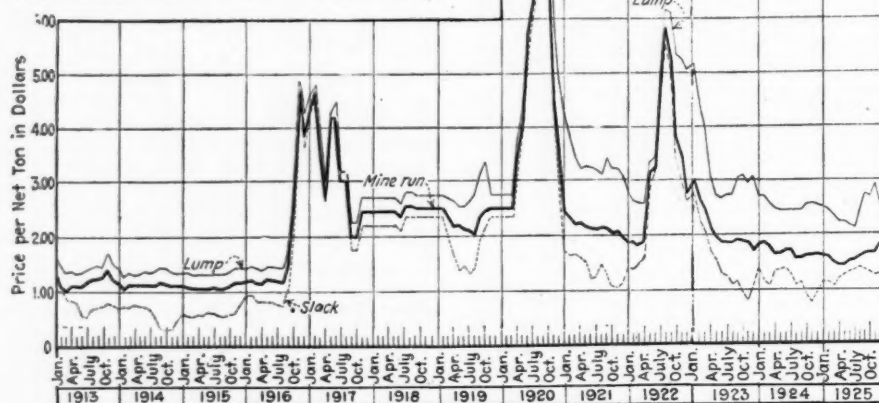
Mid-October saw a car shortage figuring for the first time since government control. The Chesapeake & Ohio cleared its situation by leasing open tops from the idle hard coalers in the East. The Louisville & Nashville, without any interlocking system to the north of the Ohio River, found itself in difficulties that were ironed out only through the good offices of the American Railway Association. This, however, caused another price stiffening.

Late November saw the "close of the

Spot Prices, F.o.b. Mines, Hocking District Coal, 1925

COLUMBUS MARKET

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January.....	\$2.50	\$1.63	\$1.14	\$1.94
February.....	2.48	1.60	1.12	1.92
March.....	2.35	1.48	1.07	1.80
April.....	2.26	1.44	1.19	1.77
May.....	2.25	1.45	1.26	1.77
June.....	2.19	1.53	1.31	1.79
July.....	2.16	1.53	1.34	1.78
August.....	2.41	1.60	1.40	1.94
September.....	2.76	1.65	1.37	2.10
October.....	2.70	1.68	1.31	2.09
November.....	2.92	1.68	1.25	2.17
December.....	2.57	1.85	1.28	2.08
Yearly average.	2.46	1.59	1.25	1.93



Spot Prices, F.o.b. Mines, on the Columbus Market, of Bituminous Coal from the Hocking District

lakes" playing its old time havoc through the overplus of coal moving there or standing being thrown upon Northern markets until it affected the whole of the price fabric and caused general recessions. The balance of the year was devoted to a feeling-out process with large users taking sparingly rather than be caught with large stocks at a period when it seemed as if the anthracite trouble would be adjusted. With all its ups and downs the market closed for 1925 with a general advance of 50c.@\$1 on all grades over the closing prices of 1924.

Smokeless Erratic

Smokeless had a changeable year; starting off at \$4@\$4.25 for lump and egg, \$2@\$2.25 for mine-run and \$1.10@\$1.15 for slack, it dropped by April 1 to a \$3 circular price with some selling spot lump at \$2.75 and with mine-run at \$2 and screenings at \$1.50. June saw a slight recovery with the quotations for the next month running \$2.75@\$3 for lump, egg down to \$2.65@\$2.75, mine-run at \$2 and slack at \$1.25@\$1.35.

This level was maintained until toward the middle or last of August, when there came a rush of dallying retailers to build up reserves, and this demand automatically raised prices to \$3.75@\$4 for lump. In September seaboard and New England demand for egg and nut sizings sent these above the level of lump, with egg at \$4.50@\$5; nut \$3@\$3.50; mine-run, \$2.50, and slack, \$2@\$2.25. The best period of the smokeless year came around Nov. 1, when spot egg touched \$7.50 top; lump, \$6.50, and nut, \$7, under buying pressure from the East and tide. All rail freight rates to New England also entered into this. Mine-run at \$2.50 and screenings at \$1.90@\$2 had the more

even keel of the low-volatile list. Close of navigation threw tonnage on the Chicago and inland markets in sufficient volume to cause a break down to \$3.50@\$4 for lump, \$3.75@\$4.25 for egg, with a slight recovery for the end of the year.

West Virginia high-volatile coals labored much under the same conditions, starting off the year with a range

months the price of lump passed the \$2 mark, mine-run moving up to \$1.25@\$1.50 and slack to \$1@\$1.25. Lump held above the \$2 mark until the end of the year, with \$3@\$3.50 recorded in October. Egg, under new demand because of the anthracite strike, reached \$2.75@\$3; some mine-run sold up to \$1.75 and screenings up to \$1.40.

Kentucky Picks Up

The Hazard, Harlan, Elkhorn and Big Sandy fields in southeastern Kentucky did not have such a bad year after weathering the first three or four nerve racking months at the beginning of the year, when block dipped from \$2.75@\$3 to \$2@\$2.25; egg from \$2 to \$1.40@\$1.65 and mine-run from \$1.50 to a low of \$1.15. The 15c. per month advance that went into effect in May looked to be a hard matter to maintain during the deadly dull summer months but the Kentucky operators at least seemed to be moved by some spirit to meet a bad situation and met it determinedly. Throughout most of the year prices on block and egg held 15c.@25c. better than those of West Virginia, with mine-run and screenings on about the same level. Specialized coals from this district have been making their presence felt. Some of these have moved right in the trail of smokeless when the market was going in the right direction; \$4.50 spot, top, was the price in October for some of this coal, which is sold on a quality argument.

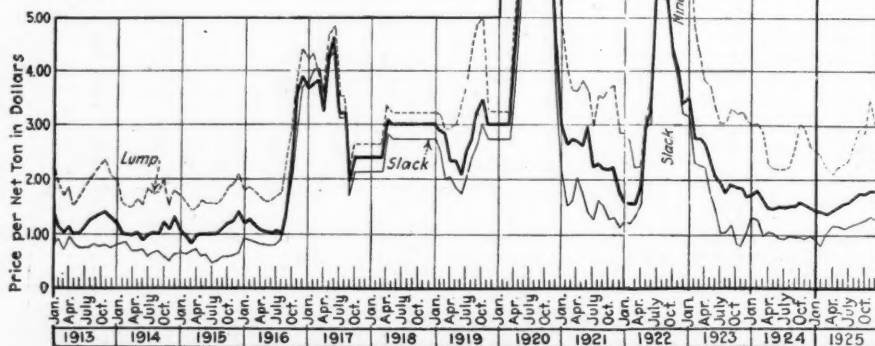
River Trade Satisfactory

River business, which takes in a sweep many miles up river and down, as a whole has been satisfactory. Neither the stage nor the weather has been severe and a healthy tonnage has been moved from the Logan County loading points with a slight diminution from the Kanawha field. With deepening of the river channel completed from Point Pleasant to Louisville the movement of coal should increase from now on in leaps and bounds.

Spot Prices, F.o.b. Mines, Southeastern Kentucky Coal, 1925

AVERAGE OF QUOTATIONS ON CINCINNATI, CHICAGO AND LOUISVILLE MARKETS

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January.....	\$2.65	\$1.44	\$0.94	\$2.08
February.....	2.56	1.42	.82	2.02
March.....	2.23	1.39	1.04	1.84
April.....	2.11	1.43	1.17	1.80
May.....	2.23	1.46	1.16	1.88
June.....	2.29	1.55	1.11	1.92
July.....	2.34	1.57	1.13	1.96
August.....	2.64	1.65	1.19	2.17
September.....	2.95	1.74	1.21	2.38
October.....	2.87	1.72	1.26	2.33
November.....	3.48	1.78	1.33	2.72
December.....	3.03	1.78	1.19	2.44
Yearly average.	2.61	1.58	1.13	2.13



Spot Prices, F.o.b. Mines, on the Louisville, Cincinnati and Chicago Markets, of Coal from Eastern Kentucky

Pittsburgh Trade Hard Hit by Inroads Of Non-Union Neighbors

Jacksonville Scale Diverts Business to West Virginia and Kentucky—Bessemer and Westmoreland Do Well—Connellsville Coke Region Busy at the Year's End

By B. E. V. Luty

If there were no coal miners' union the coal and coke trades of western Pennsylvania might have presented many interesting developments during the year 1925. As it was, the course of affairs was closely related to conditions produced by the United Mine Workers. These conditions were: (1) A high wage scale for the Pittsburgh coal district, making the cost of production much above that in the nearby non-union coal fields; (2) the anthracite suspension beginning Sept. 1, bringing about a heavy demand for Connellsville coke as a substitute for anthracite.

The Pittsburgh coal district is most commonly defined as the district having a uniform freight rate on lake coal shipments. This definition was ironical in 1925, as the district was unable to capture any lake trade, being underbid by other districts—non-union. A little Pittsburgh district coal did go into the lake trade, but it was produced at mines controlled by lake interests.

The distribution area of Pittsburgh coal was reduced, generally speaking, to a territory smaller than would be made by the points to which freights are the same from the district and from competing non-union districts. In other words, some non-union coal competed with Pittsburgh coal when it had considerably higher freights to pay. There were times, indeed, when Fairmont (W. Va.) coal stood at such f.o.b. mine prices that it could be delivered into the City of Pittsburgh on equal terms with Pittsburgh coal, but naturally it did not sell, as the preference of buyers was for the local product.

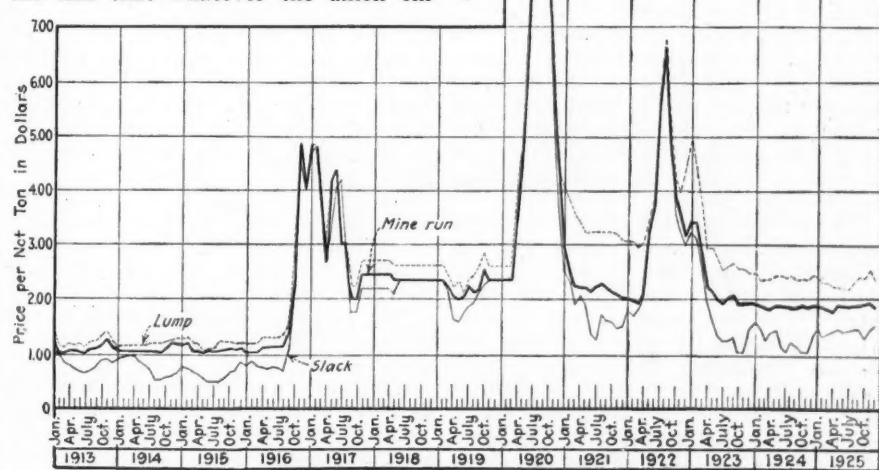
Roughly speaking, operation of the Pittsburgh district during 1925 averaged only 20 to 25 per cent of normal, whereas demand for coal in general would indicate normal production.

Much of the lost business went to West Virginia and Kentucky, but nearby regions had slightly better business than usual—the Bessemer district, particularly the portion north of Butler; also Westmoreland County. The

Connellsville region got some gas-coal business, but not a great deal.

At the beginning of the year the opinion was rather widespread that the Pittsburgh district would have to get away from the Jacksonville scale, which had been signed for the three years to April 1, 1927. There was some hope that the officials of the United Mine Workers would see the point and would be unwilling to see the Pittsburgh district practically wiped off the commercial map.

As time passed opinion turned along the line that whatever the union offi-



Spot Prices, F.o.b. Mines, on the Cleveland Market, of Coal from the Pittsburgh No. 8 District of Ohio

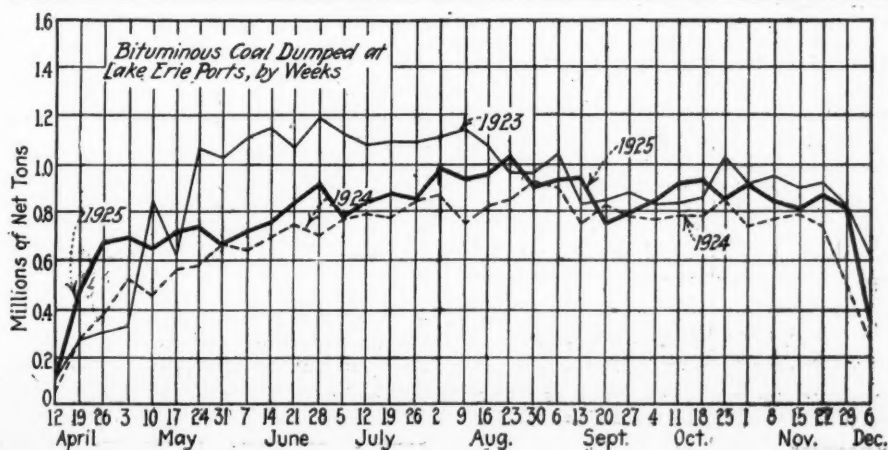
cial might do eventually, they would do nothing until they had a settlement of the anthracite scale, which was to expire Sept. 1. Producers anxious to give their men an opportunity to work at such wages as could be paid were indisposed to try the matter out as long as the anthracite contest lay ahead. The Pittsburgh Coal Co., however, after closing the last of its union mines in the district in May, began in August to open mines on the scale of November, 1917, representing about a 25 per

cent reduction. By November it had five mines in operation, without any violence, on this basis, and early in December production at the five mines ran 20,942 net tons in a week. This, however, was very small in comparison with the company's normal output, for in 1923 the company had 50 mines operating in the district, producing in the year 12,521,575 tons.

Steam mine-run coal in the open market averaged under \$2 in the first nine months of the year, and a shade over that in the last three months. Youghiogheny gas coal averaged 10c, to 15c. a ton more than steam coal.

Coke Has Bright Start

The Connellsville coke region opened the year under very favorable auspices, having a large tonnage of coke sold to blast furnaces for the first quarter at very favorable prices—\$3.25 and up to \$4. By the end of the quarter blast-furnace activities were becoming marked for a decrease, and demand for Connellsville coke fell off rapidly. The region's coke, being beehive, performs chiefly the function of taking the peak of the load. When coke requirements fall off beehive production decreases sharply and byproduct production but little. Accordingly Connellsville coke



Spot Prices, F.o.b. Mines, Pittsburgh No. 8 Coal, 1925

CLEVELAND MARKET

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January.....	\$2.40	\$1.88	\$1.44	\$2.00
February.....	2.33	1.85	1.32	1.95
March.....	2.31	1.80	1.38	1.92
April.....	2.26	1.78	1.43	1.90
May.....	2.25	1.90	1.46	1.96
June.....	2.22	1.88	1.41	1.93
July.....	2.21	1.86	1.44	1.93
August.....	2.31	1.89	1.45	1.98
September.....	2.41	1.89	1.46	2.02
October.....	2.40	1.90	1.30	2.00
November.....	2.55	1.93	1.46	2.08
December.....	2.35	1.85	1.51	1.98
Yearly average..	2.33	1.87	1.42	1.97

production dropped to a low level for June and July, while shipments of coal to byproduct ovens decreased only slightly. Coke sold at less than \$3, or at less than full cost of production. Those who operated merely felt they were losing less than by closing and losing overhead.

In August a little buying of Connells-ville coke developed, in anticipation of an anthracite suspension Sept. 1, but the product went at low prices. Even in September there were sales at low prices to the end of the year. Then, about the middle of October, the market became very active. Eastern distributors bid against each other and ordinary run-of-oven furnace coke sold at up to \$9. In a few days the market reacted, until a little pre-holiday movement took the price up to about \$6.

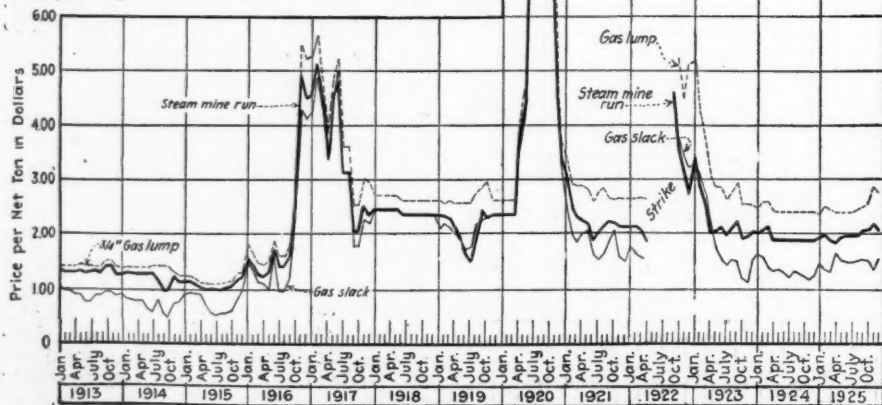
Seek Domestic Market

The Connellsville region makes practically no crushed coke as a regular operation, but various arrangements were made to prepare coke for domestic use, even to breaking coke with sledges. Some of the conveyors used in discharging ovens were rigged with crusher rolls, whereby "yard crushed" coke was produced. The various descriptions of prepared coke sold at \$1 and at times even \$2 above ordinary run-of-oven coke.

The merchant ovens of the Connells-ville region were producing about 45,000 net tons of coke a week in July and August, representing requirements of their regular trade. These requirements increased to, say, 55,000 or 60,000 tons in the closing months of the year, when the merchant-oven production was running about 100,000 tons weekly. Thus it is a fair guess that the region supplied to the East 40,000 to 45,000 tons weekly of coke, prepared and run-of-oven, as an anthracite substitute.

Spot Prices, F.o.b. Mines, of Pittsburgh District Coal, 1925

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January.....	\$2.37	\$1.91	\$1.47	\$1.93
February.....	2.50	1.95	1.37	1.96
March.....	2.44	1.88	1.32	1.90
April.....	2.40	1.83	1.65	1.93
May.....	2.40	1.92	1.52	1.95
June.....	2.40	1.95	1.50	1.96
July.....	2.40	1.95	1.50	1.96
August.....	2.45	1.95	1.52	1.98
September.....	2.50	2.05	1.55	2.04
October.....	2.56	2.09	1.52	2.08
November.....	2.88	2.19	1.39	2.20
December.....	2.78	2.05	1.55	2.13
Yearly average..	2.51	1.98	1.49	2.00



Spot Prices, F.o.b. Mines, on the Pittsburgh Market, of Coal from the Pittsburgh District

New England Market Colorless Until Anthracite Cloud Appears

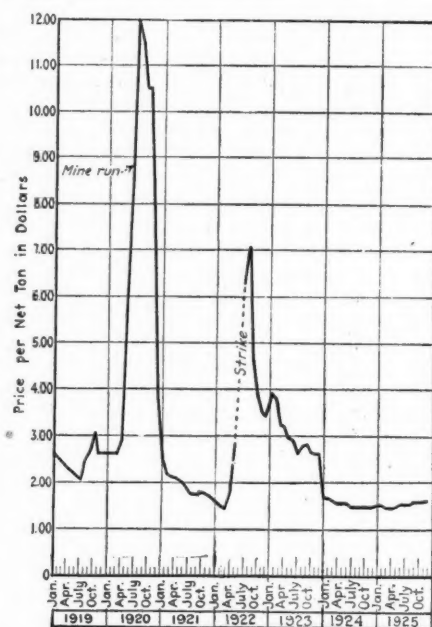
Output Easily Meets Moderate Demand for Hard-Coal Substitutes—Coke and Foreign Anthracite Preferred to Screened Bituminous—Better Selling Foreseen

By G. G. Wolkins

But for the anthracite strike the colorless state of trade in New England that marked 1925 to the beginning of August would have carried through to the end of the year. Production was ample during the whole twelve months; while operators wrestled with "unauthorized" wage scales the market was almost uniformly competitive, and except for possibly a fortnight in November wholesalers everywhere were under pressure to move coal. It was only in the autumn months that the clouds lifted and bituminous interests rushed to meet a mildly broadening inquiry for anthracite substitutes. Output increased, but even at the apex in early November all were aware that the current flow was more than sufficient. Mine labor kept at work as steadily as work offered, and it was only a matter of days when tonnage came forward in such volume that prices had to give way. The public was shown that northeastern consuming territory was anything but panic-stricken over the interruption in supply of its preferred household fuel.

The strategy of public officials here was timely, and effectively brought to bear. The merits of screened low-volatile were overemphasized, a flaw in procedure that promptly induced pyramiding, but Governor Fuller and his associates are none the less to be complimented for their firm stand at the right time. The buoyant upswing soon corrected itself; retail dealers stopped buying when they had taken on com-

fortable reserves, and when householders bought they bought sparingly. Operators who traded on a runaway market with a 3,000,000-ton anthracite shortage to support it paid for their experience, and in late December were still trying to place coal held at junction points that had been shipped in advance of sale. The blunt truth is that only a moderate proportion of householders felt called upon to use bituminous to help out; a much larger number turned to coke, foreign anthracite, foreign briquets and oil—all substitutes they preferred to soft coal—and far more than



Spot Prices, F.o.b. Mines, of Fairmont Coal (Pool 54-64), 1925

PHILADELPHIA MARKET

Month	Mine-Run
January.....	\$1.52
February.....	1.53
March.....	1.47
April.....	1.45
May.....	1.49
June.....	1.53
July.....	1.53
August.....	1.53
September.....	1.60
October.....	1.60
November.....	1.62
December.....	1.63
Yearly average.....	1.54

half the usual consumers of anthracite will have anthracite in their cellars to the end of the heating season. It is easy to see why the public is lukewarm either as to bituminous supply or a possible anthracite settlement.

Frequent cargoes of foreign coal are a factor in keeping supplied the less forehanded user. Welsh anthracite in sizes approximating our own had the call for several weeks until the supply was practically sold up, but Welsh large colliery screened, Welsh dry steam,

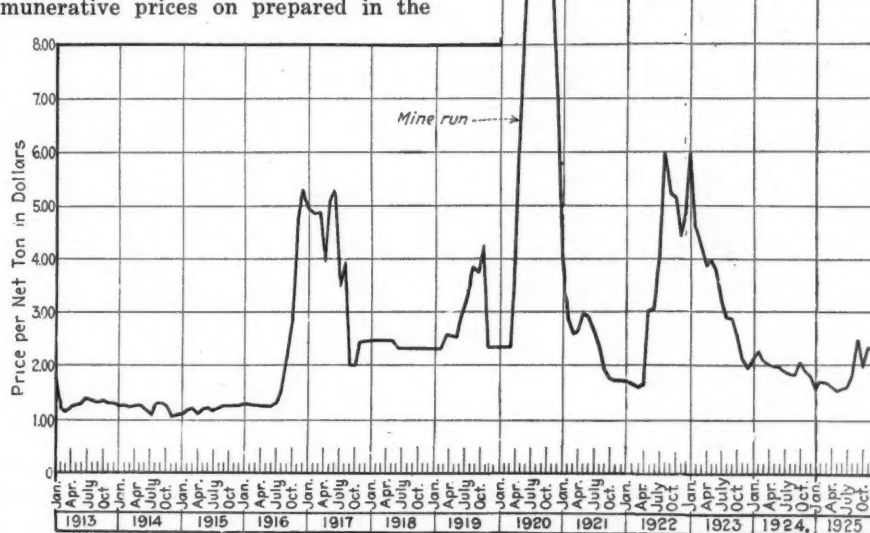
Westphalian nuts, French nuts, Welsh, Scotch, French, and Westphalian ovoids have all been shipped in comprehensive tonnages, and for those retail buyers attracted by lower prices the dealers have furnished lumps and run-of-mine through usual channels from Hampton Roads. Splints and other hard high-volatiles loaded over shaken screens also have come in for a considerable share in distribution, and if one in the trade may judge from surface indications there is not the least anxiety here for the remainder of the winter.

Bituminous displaced crude oil in a large number of plants, industrial and otherwise, during 1925. Final figures are not yet available, but gains in the use of bituminous in this field alone accounted for a relatively large tonnage.

Light oils continue to be competitive, especially in the larger cities. The perfect oil burner, we are told, is yet to be developed, and many of those using light oil in their residences regard it as a luxury fuel. The coal trade is not now greatly troubled by the inroads of petroleum.

From Pennsylvania, Maryland and the northern districts of West Virginia the traffic all-rail averaged higher than in 1924, but the weightier share of the increase was owing to prepared coal that began moving in volume early in August. For lump and egg sizes the range moved steadily upward from \$2.50 per net ton at the mine until \$6.50 was attained at first hands for high grade low-volatile. Later the market eased off to \$4.50 for the same grades, less favorably known coals selling down to \$3, but until the slump occasioned by renewed anthracite parleys in Decem-

ber there was reasonably steady demand throughout consuming territory. On the other hand run-of-mine lagged all season—not less in December than in April—and \$2.50 was a high price for any select coal at any time in 1925. The area in New England open to all-rail delivery was even more drastically circumscribed than during the year previous, and only because of remunerative prices on prepared in the



Spot Prices, F.o.b. Mines, on Boston Market, of Mine-Run Coal from Smokeless Fields of West Virginia

last quarter were mining losses less than expected.

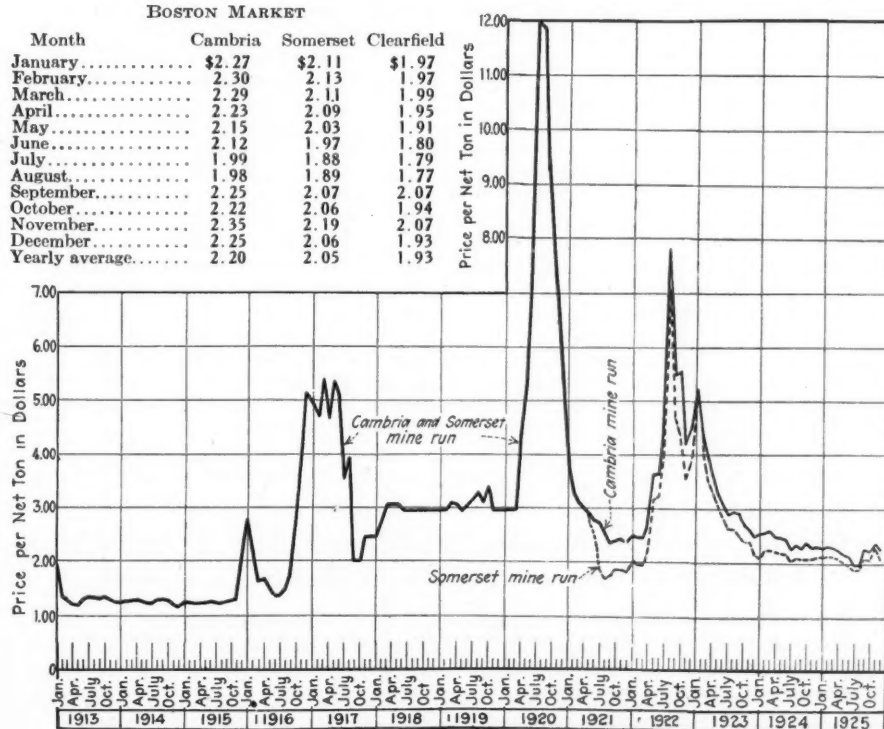
As in years prior to 1915, the water route from Hampton Roads is now the main avenue of supply for New England. Pocahontas and New River are the preferred grades of low-volatile, and while mining in the smokeless districts is uninterrupted the steam market here turns largely on the relation of demand to supply from those important sources. Industrially, 1925 was

a year of meager returns. The paper, shoe and machinery trades were in continual conflict with fitful, not to say fickle markets, but the trend was toward economies and more flexibility as to kind and rate of production than was formerly the practice. Great textile units that for scores of years never omitted a dividend did so in 1925, and there were consolidations, widespread changes in class of output, and less wasteful merchandising—all improvements in method that ought to bear fruit. But it meant moderate, even restrained buying in 1925, an attitude shared of necessity by railroads and other utilities. A five-year option granted by producing interests to one of the railroads was a symptom of the none too optimistic view held by operators as they envisage the market forward to 1930.

From the beginning of the year the smokeless operators made it evident that \$4.50 per gross ton f.o.b. vessel at Hampton Roads was the level they hoped to see maintained. Several times the price seemed pegged at that figure, only to yield to excess output invariably induced by an apparently firmer spot market. Potential production was always there to be reckoned with, and stiffly as groups might hold to a given level the stress of pier accumulation obliged them at times to eat their dish of crow. Until August there was but one short interval—in February—when it could fairly be said that the market even touched \$4.50 for No. 1 Navy Standard, but toward the end of summer, when anthracite troubles were foreshadowed, the trend was upward, although not without setbacks when buyers could operate to their advantage. The producers' policy was not well enough articulated to keep surplus coal

Spot Prices, F.o.b. Mines, Mine-Run Coal, from Cambria, Somerset and Clearfield, 1925

BOSTON MARKET			
Month	Cambria	Somerset	Clearfield
January.....	\$2.27	\$2.11	\$1.97
February.....	2.30	2.13	1.97
March.....	2.29	2.11	1.99
April.....	2.23	2.09	1.95
May.....	2.15	2.03	1.91
June.....	2.12	1.97	1.80
July.....	1.99	1.88	1.79
August.....	1.98	1.89	1.77
September.....	2.25	2.07	2.07
October.....	2.22	2.06	1.94
November.....	2.35	2.19	2.07
December.....	2.25	2.06	1.93
Yearly average.....	2.20	2.05	1.93



Spot Prices, F.o.b. Mines, on Boston Market, of Bituminous Coal from Cambria and Somerset Counties, Pennsylvania

in the ground, and substantially there were but two interludes—in September and two months later—when spot prices rose to \$5.25@5.50, in each case only to recede to a range 75c. lower almost the instant temporary pier shortages were overcome.

A consistent demand for prepared sizes opened the way for slack in increasing quantities. The larger steam users profited, slack having sold at from \$1 to \$1.40 per net ton at the mine, with contracts closed at prices not far from the minimum. Complaints were general that run-of-mine was unduly slack, but to the end of the year there was little or no improvement.

Mergers to the Fore

A few mergers were effected, and rumors are afloat that others are in process. Successive seasons of low prices are opening the minds of operators to the same economies that have been forced on New England textiles, and it is not unlikely that 1926 will exhibit progress toward concentration among bituminous interests.

For delivery inland from Boston and Providence the prices of smokeless coals on cars eased from \$5.60@5.75 per gross ton early in the year to \$5 late in June. After an interval long enough to serve mill and utility buyers with winter reserves at the low price of the season the market advanced by regular stages to \$6.50 in September, prices for the remaining months seeing-sawing between \$6 and \$6.50 according to the pressure on rehandlers to make room for arriving cargoes.

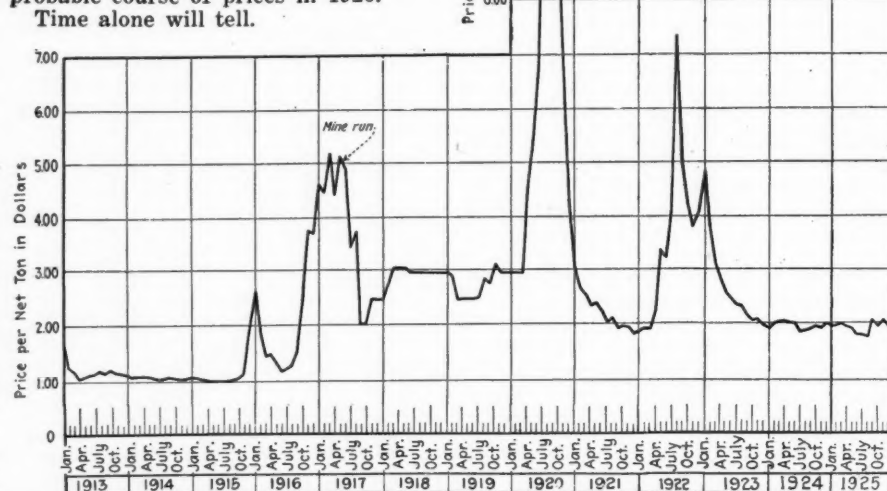
Boston retail prices were at a minimum, \$5.75@6 per net ton delivered within a wide radius, until September, when developed inquiry for household heating developed. In December \$8.50 was the accepted figure for run-of-mine for steam use, with \$11 the quotation for "lumpy run-of-mine" and \$12 asked for "lumps" when desired for domestic use. The lion's share of the tonnage was placed at the low figures prevailing during spring and summer, dealers observing their usual policy of throwing away possible profits on bituminous and relying upon anthracite to see them through.

1925 a Drab Year

Bituminous in 1925 was visited with a few enlightening prospects. There were heavy gains in tonnage; the number of domestic heating plants permanently secured to bituminous was large; a beginning was made toward economies in distribution; promiscuous and wasteful dumping on the market was resorted to in much less degree; the great market to be opened by the all-rail cross-hauled route from lower West Virginia was proved more or less a will-o'-the-wisp; new emphasis was laid upon the normal—and economically cheaper—rail-and-water route; moreover, it was shown that the vast acreage of available bituminous is a buttress for the public in a campaign that any group seeks to wage against the general welfare.

The trade enters the new year hopefully. Houses will be put in order, and there will be competitive selling to a degree not equaled in 1925. Because of the wide scope of possible output

buyers will be in position to balance nicely the offerings of different organizations, and we are safe in predicting a wholesome interplay of elementary economic principles. The question is whether operators in situations mutually similar will have learned that excessive output spells ruinous returns for the mine. On that factor rests the probable course of prices in 1926. Time alone will tell.



Spot Prices, F.o.b. Mines, on the Boston Market, of Mine-Run Coal from the Clearfield District of Pennsylvania

Coal Aplenty at Low Prices All Year In New York Market

Anthracite Scarce and Dear in Later Months, but Large Supply of Substitutes Prevents Suffering—Coke Gains Popularity—Hard-Coal Expected to Come Back

By R. W. Morris

At no time in 1925 was there any unusual activity in the coal markets at New York. During the first quarter of the year domestic sizes of anthracite moved slowly although the Northern coal fields were tied up by a strike of some 12,000 mine workers and there were other so-called outlaw strikes in other sections of the hard-coal fields. These interruptions created a shortage of steam coals, which resulted in better prices.

During the last four months of the year New York felt the effects of the complete tie-up in the hard-coal regions. There was no suffering, however, because of the plentiful supply of substitutes and the efforts made by various bodies, including the New York State Fuel Commission, to educate consumers in their use. Notwithstanding the heavy use of various substitutes it is believed that anthracite is so well entrenched in the New York market

that when hard coal again flows freely most of the market will be regained.

The soft-coal situation was not entirely unlike that of the anthracite market with the exception of the lack of coal. Soft coal was plentiful at all times but prices were at rock bottom nearly the entire twelvemonth.

With an inactive market for anthracite domestic sizes as the year opened independent operators had difficulty in moving egg and pea sizes and the harbor was dotted with many boatloads of independent product, some of which had been loaded since the previous November. Retail dealers were delivering small orders because of weather conditions. In the last half of January there was a reduction of 25c. in the prices of broken and egg and a similar advance in the price of pea coal by one of the companies.

Early in February cancellations were received and sellers settled down to a

Average Monthly Quotations for Domestic Sizes of Independent Anthracite at New York Market, by Months Up to Aug. 31

	Egg	Stove	Chestnut	Pea	No. 1 Buckwheat	Rice	Barley
January..	\$8.50-\$9.00	\$9.60-\$10.05	\$9.85-\$10.40	\$4.65-\$5.50	\$2.35-\$2.80	\$1.90-\$2.30	\$1.40-\$1.60
February..	8.50-9.15	9.20-10.00	8.75-10.00	4.50-5.50	2.25-2.90	1.90-2.25	1.35-1.60
March....	8.25-8.75	8.50-9.00	8.25-9.00	4.25-5.50	2.00-2.80	1.85-2.25	1.35-1.60
April.....	8.25-8.75	8.50-9.00	8.25-8.75	4.25-5.25	2.00-2.75	1.80-2.15	1.35-1.55
May.....	8.50-9.00	8.75-9.20	8.40-8.75	4.95-5.50	2.00-2.60	1.75-2.10	1.35-1.60
June.....	8.50-8.85	8.85-9.25	8.25-8.60	4.80-5.50	2.00-2.45	1.75-2.10	1.35-1.50
July.....	8.65-8.90	9.05-9.45	8.50-9.00	5.00-5.50	2.00-2.50	1.80-2.00	1.35-1.60
August...	9.65-10.20	10.00-10.80	9.60-10.15	5.30-6.10	2.25-2.60	2.05-2.30	1.50-1.80

Average Prices of Bituminous Coal at New York by Months in 1925

	Pools				
	1	9	10	11	34
January.....	\$2.60-\$2.95	\$1.90-\$2.30	\$1.75-\$2.00	\$1.50-\$1.75	\$1.40-\$1.65
February.....	2.50-2.90	1.95-2.25	1.70-1.95	1.45-1.75	1.35-1.65
March.....	2.50-2.85	1.90-2.25	1.65-1.95	1.40-1.70	1.40-1.65
April.....	2.40-2.80	1.90-2.20	1.70-2.00	1.40-1.65	1.35-1.60
May.....	2.40-2.70	1.85-2.10	1.75-2.00	1.45-1.75	1.40-1.65
June.....	2.40-2.75	1.85-2.15	1.75-2.00	1.45-1.70	1.40-1.60
July.....	2.40-2.70	1.80-2.15	1.70-1.95	1.50-1.70	1.45-1.65
August.....	2.40-2.75	1.85-2.15	1.65-1.95	1.50-1.70	1.45-1.70
September.....	2.75-3.00	2.10-2.30	1.85-2.15	1.75-1.90	1.45-1.65
October.....	2.75-3.00	2.10-2.30	1.85-2.15	1.75-1.90	1.50-1.65
November.....	2.75-3.15	2.15-2.45	1.85-2.20	1.65-1.80	1.50-1.65
December.....	2.75-3.15	2.15-2.50	1.85-2.25	1.65-1.90	1.55-1.80

quiet time until April 1, when it was expected the large companies would announce the usual spring reductions. Stove coal held the lead in demand, with occasional spurts by egg and chestnut sizes.

About the middle of March new spring prices were announced by the various companies and a new price for No. 1 buckwheat was included. The new quotations had been discounted by individual operators, many of whom had been selling their coal for a few weeks previous subject to these figures. Stove coal was in such heavy demand that some of the smaller producers found it necessary to pro-rate either egg or chestnut sizes with orders for stove coal.

An "early-buying" campaign by operators and retailers in April resulted in a slightly better market. Egg coal moved in better shape. There was heavier booking of orders and consumers began to fill their bins. Toward the end of May buying eased off again and retailers soon filled their yards.

Some stimulation resulted as the time for the beginning of the wage conferences drew near. Boats were loaded and held for future buyers. Independent broken coal in boats was quoted on a basis of \$9.20 at the mines, and stove coal under the same conditions was quoted at around \$10.25, some quotations for independent coals going as high as \$10.75.

Demand became so strong that some independent operators soon began to refuse orders and the larger companies were pro-rating their supplies among regular customers. Buyers got busy the latter part of August and quotations went as high as \$11.25 for stove, \$11 for egg and \$10.75 for chestnut.

Although the miners stopped work on Sept. 1 consumers showed little interest. Retailers put in orders, and prices for independent output became stronger. Retail prices advanced to \$15.90 and later to \$23.50 in some of the boroughs of Greater New York. Some middlemen had coal in bottoms which they offered at \$15@16.25 alongside, fresh-mined coal being offered at \$12.50@14 at the mine. Stock chestnut coal was offered around \$11 f.o.b. mine. Rice and barley were not quoted by many dealers and shippers.

Relax Smoke Laws

Early in September at the solicitation of the New York State Fuel Commission the various municipalities suspended so-called anti-smoke ordinances in order to permit house owners as well as other coal consumers to burn soft coal until such time as hard coal flowed freely again. This action increased the use of mine-run coals considerably.

Coke was in good demand the last three months of the year and while domestic hard coals were quoted at around \$23.50 by those dealers who were able to make deliveries, coke was quoted at \$13.50.

There was no activity in the bituminous market at New York when the year opened. Pool 1 coal from central Pennsylvania was quoted at \$2.65@2.90 with the other pool coals quoted in proportion. Demand depended almost entirely upon weather conditions, which were anything but satisfactory

to the coal industry. Buyers were looking for bargains and in many instances it was a "buyers' market. The tide-water market improved slightly, however, and some industrial contracting was reported.

The situation at New York in March was near the rocks, but some hope was seen in the discussion soon to be staged at Cleveland between operators and miners' representatives as to a possible modification of the terms of the Jacksonville agreement. Non-union operators had been able to sell their product at less than the quotations of the union operators and obtained the bulk of the trade. Offers of contract coal had been reported at \$3 for pool 1, and at \$2.15 @ \$2.35 for pools 9 and 71.

Later on when consumers were expected to increase standing orders for immediate consumption they used coal from reserve stocks. Some contracts were reported as having been made at current market prices, extending from July 1 to March 31, 1926.

Soon after the beginning of the anthracite strike extra efforts were made to induce the use of screened bituminous coals in this market, but they were only partly successful.

New River and Pocahontas coals came into the market freely and were used in large quantities on Long Island.

Several cargoes of German byproduct coke were landed at New York at a reported price of \$12 per gross ton, alongside.

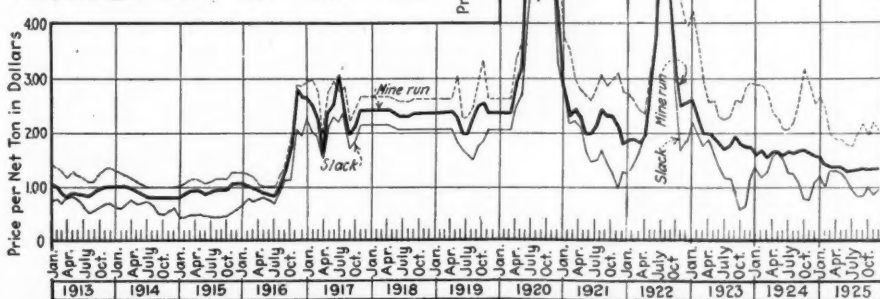
Bituminous Coal Production
Spot Price and Index
By Weeks, 1925

Week Ended	Production (Net Tons)	Week Ended	Average Spot Price	Coal Age Index
Jan. 3...	10,806,000	Jan. 5...	\$2.08	172
Jan. 10...	12,590,000	Jan. 12...	2.12	175
Jan. 17...	12,028,000	Jan. 19...	2.11	174
Jan. 24...	11,588,000	Jan. 26...	2.09	173
Jan. 31...	11,073,000	Feb. 2...	2.05	...
Feb. 7...	10,910,000	Feb. 9...	2.03	168
Feb. 14...	9,758,000	Feb. 16...	2.04	168
Feb. 21...	9,464,000	Feb. 23...	2.03	168
Feb. 28...	8,854,000	March 2...	2.04	169
March 7...	9,384,000	March 9...	2.02	167
March 14...	8,641,000	March 16...	1.99	165
March 21...	8,283,000	March 23...	1.97	163
March 28...	8,353,000	March 30...	1.95	161
April 4...	7,546,000	April 6...	1.96	162
April 11...	7,843,000	April 13...	1.95	161
April 18...	7,515,000	April 20...	1.95	161
April 25...	8,029,000	April 27...	1.96	162
May 2...	7,987,000	May 4...	1.96	162
May 9...	8,277,000	May 11...	2.01	166
May 16...	8,350,000	May 18...	1.95	161
May 23...	8,451,000	May 25...	1.96	162
May 30...	8,141,000	June 1...	1.96	162
June 6...	8,375,000	June 8...	1.95	161
June 13...	8,621,000	June 15...	1.94	160
June 20...	8,400,000	June 22...	1.95	161
June 27...	8,662,000	June 29...	1.94	160
July 4...	7,352,000	July 6...	1.94	160
July 11...	7,352,000	July 13...	1.93	160
July 18...	8,639,000	July 20...	1.93	160
July 25...	8,966,000	July 27...	1.94	160
Aug. 1...	9,343,000	Aug. 3...	1.97	163
Aug. 8...	9,457,000	Aug. 10...	2.01	166
Aug. 15...	9,971,000	Aug. 17...	2.02	167
Aug. 22...	10,261,000	Aug. 24...	2.08	172
Aug. 29...	10,522,000	Aug. 31...	2.10	174
Sept. 5...	11,133,000	Sept. 7...	2.16	179
Sept. 12...	10,827,000	Sept. 14...	2.16	178
Sept. 19...	9,983,000	Sept. 21...	2.24	185
Sept. 26...	10,880,000	Sept. 28...	2.13	176
Oct. 3...	11,232,000	Oct. 5...	2.11	175
Oct. 10...	11,008,000	Oct. 12...	2.11	175
Oct. 17...	11,681,000	Oct. 19...	2.13	176
Oct. 24...	11,770,000	Oct. 26...	2.15	178
Oct. 31...	12,088,000	Nov. 2...	2.19	181
Nov. 7...	12,485,000	Nov. 9...	2.24	185
Nov. 14...	12,171,000	Nov. 16...	2.30	190
Nov. 21...	12,167,000	Nov. 23...	2.32	192
Nov. 28...	12,596,000	Nov. 30...	2.26	187
Dec. 5...	11,600,000	Dec. 7...	2.22	184
Dec. 12...	12,868,000	Dec. 14...	2.20	182
Dec. 19...	12,908,000	Dec. 21...	2.17	179
Dec. 26...	12,689,000	Dec. 28...	2.16	17

Spot Prices, F.o.b. Mines Western Kentucky Coal, 1925

AVERAGE OF QUOTATIONS ON CHICAGO AND LOUISVILLE MARKETS

Month	Lump	Run of Mine	Screenings	Weighted Av. All Sizes
January.....	\$2.60	\$1.54	\$1.16	\$1.84
February.....	2.42	1.40	1.02	1.69
March.....	1.97	1.35	1.28	1.55
April.....	1.88	1.35	1.27	1.52
May.....	1.86	1.35	1.21	1.50
June.....	1.77	1.28	1.13	1.42
July.....	1.74	1.28	.98	1.39
August.....	1.97	1.29	.82	1.44
September.....	2.16	1.31	.82	1.51
October.....	1.97	1.30	1.00	1.48
November.....	2.20	1.31	.84	1.54
December.....	2.04	1.31	.94	1.49
Yearly average..	2.05	1.34	1.04	1.53



Average Spot Prices, F.o.b. Mines, on the Louisville and Chicago Market, of Coal from Western Kentucky

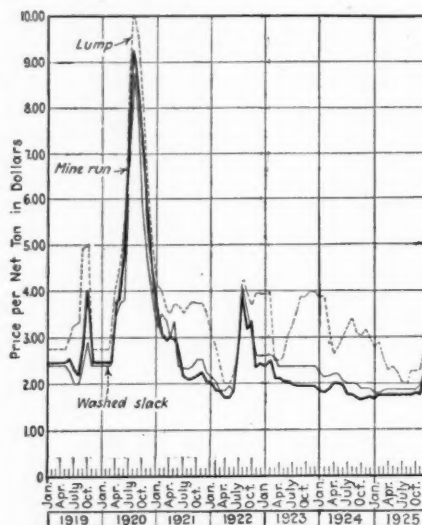
Birmingham Trade Has Fairly Good Year

Commercial Movement Gains Impetus After Weak Start—Bunker Trade Finishes Strong—Domestic Demand Drags—Coke Industry Makes Big Strides

By H. B. McLaurine

Taken as a whole, the Alabama coal industry enjoyed a fairly satisfactory market during the year just closed. During the first nine months demand for commercial fuel was sufficiently large to move output with reasonable promptness and without undue solicitation by agents and brokers. In this connection it should be stated, however, that during the greater part of this period such activity as prevailed was accentuated to some extent by the fact that production was restricted materially by inability of producers to dispose of lump and other domestic sizes, so that active mines were operated only two to four days per week to provide contract requirements and take care of spot business actually in hand. The resultant output closely approximated trade absorption, and very little surplus steam product was accumulated at any time.

During January and February the bunker trade was above normal; demand fell off in March, and the usual dullness prevailed through the summer months. Buying of commercial coal was satisfactory during this period, cement plants and textile industries providing large and consistent consumers, augmented by the railroads, which used



Spot Prices, F.o.b. Mines, on the Birmingham Market, of Coal from Alabama Fields

conditions. A severe and prolonged drought throughout the South forced capacity operation of steam power plants for a long period in the latter

Spot Prices, F.o.b. Mines of Big Seam (Alabama) Coal, 1925

BIRMINGHAM MARKET			
Month	Lump	Run of Mine	Washed
January.....	\$2.80	\$1.67	\$1.80
February.....	2.87	1.75	1.78
March.....	2.50	1.75	1.84
April.....	2.28	1.75	1.88
May.....	2.35	1.75	1.88
June.....	2.26	1.75	1.88
July.....	2.02	1.75	1.88
August.....	2.00	1.75	1.88
September.....	2.24	1.75	1.88
October.....	2.25	1.79	1.88
November.....	2.28	1.76	1.94
December.....	2.68	2.11	2.27
Yearly average.....	2.38	1.78	1.90

sumption through October, November and December proving heavier than during any previous like period in recent years. General industrial demand waxed exceptionally strong in the last quarter, coking coals and well-prepared steam product being featured in the buying. Coke plants without their own source of supply of coal were hard pressed at times to keep ovens going at capacity warranted by the unusually strong market for all grades of coke. Not only was home consumption heavy but demand from other markets was abnormally large, due in a measure to the anthracite strike, and production and movement exceeded peace-time records.

The market for domestic grades was draggy and unsatisfactory during the greater part of the year. The previous winter, one of the mildest in recent years, left dealers with large stocks on hand and there was little but spot buying to support the trade during the first quarter, when the weather was very unseasonable. At the beginning of the coal year the yards still had considerable stocks and dealers were slow and indifferent about making contracts for further stocking during the spring and summer. A fairly good tonnage was booked by the mines, however, the bulk of deliveries being stipulated for late summer months. These were held up, however, and comparatively little coal was delivered on these contracts, the largest percentage of cancellations ever known being recorded. Buying during the last four months of the year was sporadic and at no time was demand

Average Range of Coal Prices at Birmingham in 1925

	January			April		
	Mine-Run	Washed	Lump	Mine-Run	Washed	Lump
Big Seam.....	\$1.50@2.00	\$1.50@2.00	\$2.50@3.25	\$1.50@2.00	\$1.75@2.00	\$2.25
Carbon Hill.....	1.75@2.10	1.75@2.10	3.35@3.55	1.90@2.25	1.90@2.25	2.50
Cahaba.....	2.00@2.25	2.00@2.50	5.00@6.00	2.00@2.50	1.75@2.50	3.25@4.00
Black Creek.....	2.25@2.50	2.25@2.50	5.00@5.50	2.25@2.50	2.00@2.50	3.50
Pratt.....	1.85@2.00			2.00@2.25		
Corona.....	2.00@2.25	2.25@2.50	4.00	2.00@2.25	2.25@2.50	2.75
Montevallo.....			5.50@6.00			3.75@4.50

	September			December		
	Mine-Run	Washed	Lump	Mine-Run	Washed	Lump
Big Seam.....	\$1.60@2.00	\$1.75@2.00	\$2.00@2.50	\$2.00@2.25	\$2.10@2.50	\$2.50@3.00
Carbon Hill.....	1.90@2.00	1.90@2.25	3.25	2.00@2.25	2.25@2.50	3.25@3.50
Cahaba.....	2.00@2.50	2.00@2.50	4.25@5.00	2.25@2.50	2.50@3.00	4.25@5.00
Black Creek.....	2.25@2.50	2.25@2.75	4.50	None	2.50@3.00	4.50@5.00
Pratt.....	2.00@2.25			2.50		
Corona.....	2.00@2.25	2.25@2.50	3.50	2.50	2.75	4.00
Montevallo.....			5.25@5.75			5.75@6.00

in excess of the normal tonnage. Ice plants, gineries, oil plants and the lumber industry proved good seasonal customers. Industrial and railroad contracts were renewed under satisfactory

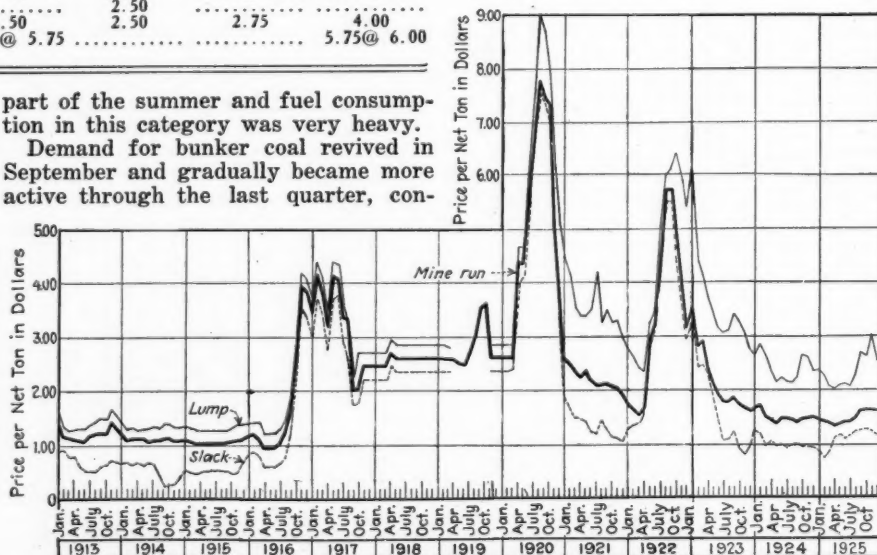
part of the summer and fuel consumption in this category was very heavy.

Demand for bunker coal revived in September and gradually became more active through the last quarter, con-

Spot Prices, F.o.b. Mines, Kanawha and W. Va. High Volatile Coals, 1925

AVERAGE OF QUOTATIONS ON COLUMBUS AND CINCINNATI MARKETS

Month	Lump	Run of Mine	Slack	Weighted Av. All Sizes
January.....	\$2.38	\$1.46	\$0.89	\$1.63
February.....	2.29	1.43	.74	1.57
March.....	2.09	1.40	.87	1.52
April.....	2.03	1.36	1.13	1.52
May.....	2.10	1.38	1.17	1.56
June.....	2.11	1.41	1.11	1.57
July.....	2.08	1.41	1.16	1.57
August.....	2.30	1.47	1.23	1.67
September.....	2.70	1.61	1.25	1.86
October.....	2.64	1.63	1.27	1.86
November.....	3.03	1.63	1.25	1.97
December.....	2.56	1.62	1.17	1.82
Yearly average..	2.36	1.48	1.10	1.68



Spot Prices, F.o.b. Mines, on Columbus and Cincinnati Markets, of Coal from the Kanawha Field

active for any great period. Business was booked only in sufficient quantity to move current production without harmful delay.

Mine quotations on steam and domestic coal during the year maintained unusual stability, suffering only slight decreases during periods of more or less depression. Steam prices registered substantial gains and domestic prices were practically the same at the close of the year as at the beginning.

The domestic market during the first quarter of 1926 will be controlled by weather conditions, but as neither dealers nor consumers are buying beyond anticipated requirements for the immediate future, indications are that yards will be practically clear at the beginning of the new coal year, April 1.

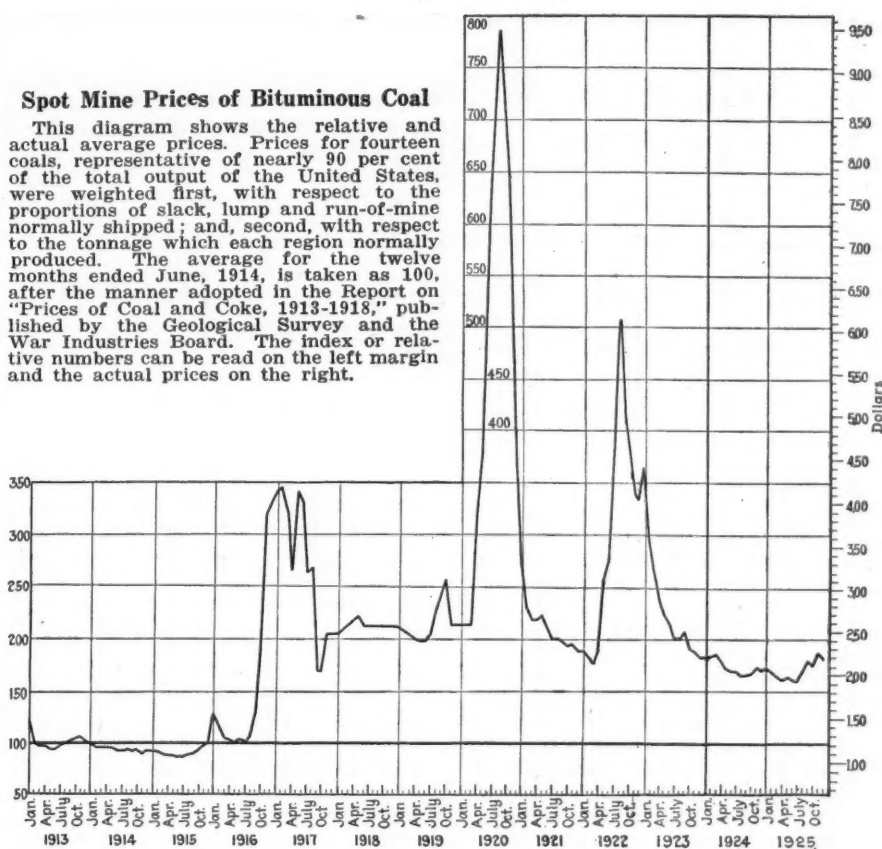
General opinion prevails that industrial prosperity has an impetus that will carry it well into 1926 and prospects therefore are good for an active steam market during the first quarter at least.

Alabama's coal production for 1925 is expected to closely approximate the 20,000,000 ton mark. Free from labor troubles and unhampered by union affiliations, with the rigid wage scales which played havoc with operations in some of the states farther north, Alabama operators were able to take advantage of the developments in demand in highly competitive markets. Weekly production at the high point in December was on the basis of 27,500,000 tons per annum.

There were occasional slumps in the coke market during the first nine months, but demand was sufficient at all times to move the available tonnage of commercial and domestic product

Spot Mine Prices of Bituminous Coal

This diagram shows the relative and actual average prices. Prices for fourteen coals, representative of nearly 90 per cent of the total output of the United States, were weighted first, with respect to the proportions of slack, lump and run-of-mine normally shipped; and, second, with respect to the tonnage which each region normally produced. The average for the twelve months ended June, 1914, is taken as 100, after the manner adopted in the Report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. The index or relative numbers can be read on the left margin and the actual prices on the right.



without undue effort or delay. Demand was exceptionally heavy during most of the last quarter. A great deal of foundry coke was shipped to Pacific coast points and the distribution was over a wide range of southern and southeastern territory. Domestic sizes

were bought in quantity for use in the North and Northwest in the early part of the year and during the last quarter there was a more extensive movement to these sections, and also, due to the strike in the anthracite coal field, to Eastern points, some of which was bunkered on transatlantic liners.

Sales would have been much heavier had not freight rates been almost prohibitive; besides, there was a strong disinclination on the part of Southern carriers to allow equipment to move to distant destinations. Quotations ranged from \$4.50@5 on foundry grades at the beginning of the year to \$6@6.50 per ton during the last quarter. Egg and nut sizes during this period ranged from \$3.25@3.50 to \$4.75@5.50 per ton. Quotations on gas coke ranged \$3.50@4 to \$6@6.50 per ton as the year closed.

Relative Prices of Bituminous Coal

(Spot prices July, 1913-June, 1914, as base)

Month	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
January.....	120	100	93	126	343	205	213	212	270	186	362	183	173½
February.....	101	96	92	116	346	209	206	213	229	182	297	186	168½
March.....	97	96	90	105	321	214	204	213	217	175	264	178	165
April.....	97	96	89	103	265	218	200	318	217	185	235	171	161½
May.....	95	96	89	100	342	221	197	379	222	257	221	169	162
June.....	95	93	88	104	331	212	198	593	208	274	212	167	160½
July.....	97	93	87	101	262	213	204	681	198	386	198	163	160
August.....	100	93	88	107	268	213	228	786	200	507	198	164	166
September.....	102	92	91	130	167	213	241	704	196	461	203	167	179
October.....	106	93	93	187	167	213	256	643	193	370	188	174	176
November.....	108	91	97	320	205	213	212	485	194	340	186	170	187
December.....	104	92	110	332	205	213	213	362	187	335	180	170	181
1st Quarter.....	106	97	92	116	337	209	208	213	239	181	307	182	169
2d Quarter.....	96	95	89	102	313	217	198	430	216	218	222	169	162
3d Quarter.....	100	93	89	113	232	213	224	723	198	451	200	165	168
4th Quarter.....	106	92	97	280	192	213	227	497	191	348	184	171	181
Yearly average....	102	94	91	152	269	213	214	466	211	303	226	172	170

Average Spot Prices of Bituminous Coal, F.o.b. Mines

(Unit, net ton of 2,000 lb.)

Month	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
January.....	\$1.46	\$1.21	\$1.13	\$1.53	\$4.15	\$2.48	\$2.57	\$2.57	\$3.26	\$2.25	\$4.38	\$2.21	\$2.10
February.....	1.22	1.16	1.12	1.40	4.18	2.53	2.49	2.58	2.77	2.20	3.59	2.25	2.04
March.....	1.17	1.17	1.09	1.27	3.89	2.58	2.47	2.58	2.63	2.12	3.20	2.15	1.99
April.....	1.17	1.16	1.08	1.24	3.21	2.64	2.43	3.85	2.62	2.24	2.84	2.07	1.95
May.....	1.15	1.16	1.07	1.21	4.14	2.67	2.38	4.59	2.68	3.11	2.68	2.04	1.97
June.....	1.14	1.12	1.07	1.26	4.00	2.57	2.40	7.18	2.52	3.32	2.56	2.03	1.95
July.....	1.18	1.12	1.05	1.22	3.17	2.58	2.47	8.24	2.40	4.67	2.40	1.98	1.93
August.....	1.22	1.13	1.07	1.30	3.24	2.58	2.76	9.51	2.42	6.13	2.39	1.99	2.04
September.....	1.23	1.11	1.10	1.57	2.02	2.58	2.91	8.52	2.37	5.58	2.46	2.02	2.18
October.....	1.29	1.13	1.12	2.26	2.02	2.58	3.09	7.78	2.33	4.48	2.28	2.10	2.13
November.....	1.31	1.10	1.17	3.87	2.48	2.58	2.57	5.87	2.35	4.11	2.25	2.06	2.26
December.....	1.26	1.11	1.33	4.01	2.48	2.58	2.58	4.38	2.26	4.05	2.18	2.06	2.19
1st Quarter.....	\$1.28	\$1.18	\$1.11	\$1.40	\$4.07	\$2.53	\$2.51	\$2.58	\$2.89	\$2.19	\$3.72	\$2.20	\$2.04
2d Quarter.....	1.15	1.15	1.07	1.24	3.78	2.63	2.40	5.20	2.61	2.64	2.69	2.04	1.96
3d Quarter.....	1.21	1.12	1.07	1.36	2.81	2.58	2.71	8.76	2.40	5.46	2.42	2.00	2.05
4th Quarter.....	1.29	1.11	1.21	3.38	2.33	2.58	2.74	6.01	2.31	4.21	2.23	2.07	2.19
Yearly average....	\$1.23	\$1.14	\$1.12	\$1.85	\$3.25	\$2.58	\$2.59	\$5.64	\$2.55	\$3.67	\$2.77	\$2.08	\$2.06

Rate Cuts Aided South

In the efforts to reach northern markets during the last quarter Alabama ovens were opposed by Middle Western plants, which objected to reductions in rates from the Birmingham district. Some adjustments, nevertheless, were allowed by the Interstate Commerce Commission.

Coke production for the year probably was close to 4,750,000 tons, though no figures for estimating purposes are yet available. Coke manufacturing facilities in the district have been materially increased in the past twelve months. The Alabama Byproduct Corporation added twenty-five Koppers ovens to its coking plant and the Republic Iron & Steel Co. completed an entirely new plant of fifty-seven ovens and the necessary equipment and facilities for handling the byproducts. The Woodward Iron Co. practically rebuilt forty of its Koppers ovens. Work will

FOREIGN MARKETS

Reviews by Our Correspondents in London, Paris and Berlin Recording Economic Progress in Europe as Reflected in the Basic Industries of Coal and Coke

British Trade Suffers Gradual Decline

Business Picks Up When Subsidy Makes Price Cut Possible—Rising Production Costs a Handicap—Modern Machinery May Hold Partial Solution

By C. H. S. Topholme

Difficulties were plentiful in the path of the British coal trade in 1925, and, notwithstanding improved business in the late fall and early winter, the outlook of the trade is indeed gloomy.

On the whole, business has declined gradually this year. In August and September, following the government subsidy, buyers, who already had fairly heavy stocks on hand, waited until the British operators reduced prices. After a somewhat protracted resistance the producers did so, and business increased. Prices are now lower all round; best Admiralty, which at the opening of the year, stood around 28s. @30s., has fallen to 23s.

Shipments, of course, have declined, as shown in the following table of tonnage shipped from the ports of Cardiff, Swansea, Newport, Barry, Port Talbot and Penarth, during the first ten months of 1913, 1924 and 1925:

Coal Shipments from Welsh Ports

(In Gross Tons)			
Coal and Coke			
1913	1924	1925	
32,711,312	26,193,212	21,757,206	
Patent Fuel			
1,009,980	815,713	844,603	

Certain customers of the coal fields have been lost and will not be re-won. The most important of these is the British Navy, which before the war took 1,750,000 tons, and now requires only 350,000 tons. This is due, of course to the conversion of large numbers of ships to oil fuel.

The one bright spot is the anthracite branch, which still enjoys comparative prosperity, but though demand is good and prices are satisfactory, production has not increased; output in 1925 was

lower than that for any of the three previous years, due to the strike in July and August. Further, the costs of mining and preparing anthracite have tended to increase. The total output of the Welsh collieries in the last few years is given in the subjoined table, from which it will be seen that anthracite has represented approximately 10 per cent of all coal produced in the last two years:

Output of Welsh Coal Mines

(In Gross Tons)			
Year	Total Output	Anthracite	
1913	56,830,000	4,833,000	
1923	54,321,000	4,873,000	
1924	51,085,000	4,971,000	
1925	45,000,000*	4,500,000*	

*Calculated from output to end of November.

High production costs are the chief handicap of the British coal trade. Hitherto the quality of Welsh coal has enabled it to command a price of several shillings above that of its competitors in the world markets, but this advantage is slipping because of the reduction of mining costs in other countries, especially on the Continent, where cheap labor plays such an important part—that is to say, cheap when reckoned at British money value. Some of the British coal fields have been able to lower their costs, due largely to more easily workable seams, but Wales has not shared in this reduction owing to the fact that the mines are on the average much older than in other parts of Britain. The effect of these factors is seen in the figures of coal sold by the various fields, South Wales losing trade to the tune of six million tons, the bulk of this being in the steam divisions.

The causes of the decline in the sales

of Welsh coal is easily traceable. The mines being older, the seams are deeper and the distances from the pits to the working faces are longer. (It may be remarked here that so far conveyors have done little to reduce the distance.) In addition, though working hours are shorter, the output per worker is lower. In 1913, for instance, 233,090 men were engaged on surface and underground work in Wales, and the output per worker for the year was 243 tons, eight hours constituting a work day. In 1923, when 252,617 men were engaged, the output was 215 tons per man, the day being seven hours. In 1924, 250,065 men were employed and the output was only 204 tons. The figures for 1925, which are not yet available, must be substantially less. These figures are all the more significant when it is remembered that with the increased use of underground machinery, considerably more coal cutters and conveyors were in use in 1924 than in 1913.

Lower output and higher wages have more than doubled working costs, and, where it was possible in 1913 to make a comfortable profit on low-priced coals, the operators between May 1, 1924, and April 30, 1925, suffered an average loss of 5½d. per ton. From May 1 to July 31 the loss rose to 1s. 2.09d. per ton. At this point the government subsidy came into operation, and since then the average loss has been 10½d. per ton over and above the amounts recoverable under the subvention scheme. The amount of this subsidy paid to the Welsh mines in August was £349,232; in September it had increased to £401,185, a total of £750,417, which is about 2s. 7d. per ton of output for those two months.

These figures, it should be borne in mind, are averages, for while the anthracite mines have made certain profits, some of the collieries producing steam coal have been sustaining losses as great as 2s. to 3s. per ton. This constitutes one of the gravest industrial problems ever encountered in Great Britain. As announced some time ago, the subsidy of ten millions sterling has already been exhausted,

Receipts of Coal at Milwaukee by Months in 1925

(In Net Tons)

	By Cargo			By Car—Ferry			By Rail			Total, All Sources—			Grand Total
	Hard	Soft	Total	Hard	Soft	Total	Hard	Soft	Total	Hard	Soft	Total	
January				26,711	71,613	98,324	670	64,108	64,778	27,381	135,721	163,102	
February				15,531	43,909	59,440	1,102	42,421	43,523	16,633	86,330	102,963	
March				24,728	32,821	57,549	3,448	45,036	48,484	28,176	77,857	106,033	
April	133,408	177,471	310,879	10,188	11,488	21,676	7,410	38,095	45,505	151,006	227,054	378,060	
May	83,107	295,289	378,396	13,449	25,154	38,603	5,350	31,970	37,320	101,906	352,413	454,319	
June	94,840	332,258	427,098	16,446	27,838	44,284	4,320	29,855	34,175	115,606	389,951	505,557	
July	74,779	434,045	508,824	16,571	27,601	44,172	4,934	32,634	37,568	96,284	494,280	590,564	
August	89,800	495,968	585,768	28,768	41,377	70,145	3,325	34,005	37,330	121,893	571,350	693,243	
September	12,300	374,494	386,794	29,487	41,034	70,521	3,650	34,361	38,011	45,437	449,889	495,326	
October		519,542	519,542	24,431	35,934	60,365	7,026	40,121	47,147	31,457	595,597	627,054	
November		453,632	453,632	24,288	52,241	76,529	4,683	45,086	49,769	28,971	550,959	579,930	
December		128,957	128,957	15,774	58,662	74,436	5,610	48,580	54,190	21,384	236,199	257,583	
Total, 1925	488,234	3,211,656	3,699,890	246,372	469,672	716,044	51,528	486,272	537,800	786,134	4,167,600	4,953,734	
Total, 1924	821,962	2,596,423	3,418,385	245,966	465,219	711,185	21,703	509,628	531,331	1,089,631	3,571,270	4,660,901	

and Parliament was asked to vote another nine millions to tide the industry over until March, when it is expected that the commission now inquiring into conditions in the industry will have concluded its investigation.

Neither the commission nor the subsidy will solve the problems of the coal-mining industry, in my opinion. The solution of these problems must come from within the industry itself, and no amount of assistance from the taxpayer or commissions will avail the industry anything. What will happen when the subsidy is exhausted and the commission issues its voluminous report, which it is fairly safe to predict will be ignored by all except paper economists, it is difficult to say, but in

some quarters an industrial upheaval is held to be inevitable.

As far as the outlook of the industry is concerned, everything turns upon whether working costs can be reduced. British mines are taking more interest in machinery and also in the possibilities of utilizing electrical power to the utmost. This is shown by the attention given to such subjects as machine cutting and automatic substations in discussions and in the technical press and the proceedings of societies made up largely of coal-mining engineers. Though mechanical devices are largely looked to for a partial solution of many of the British coal mining problems, there is still enormous prejudice on the part of labor against such devices.

French Market Aided by Franc's Fall; Imports from Britain Drop

Industrial Revival Near Year's End Quickens Demand After Long
Spell of Dullness—Severe Weather Stiffens Domestic
Trade—Output Exceeds Pre-War Rate

By Victor Truant

In 1925 the French coal industry was ruled more by the fluctuations of exchange rates and by the rates of wages than by the sacrosanct law of "supply and demand." Low consumption caused a rather inactive market during the first part of the year; French coals would have been even more neglected if the appreciation of sterling, compared with the franc, had not formed a protective barrier, which caused the British coal to suffer first.

During the greater part of the year up to October the inland market for French coals remained quiet. Industry, which was working at slow speed, consumed little coal, all the while the competition of British and Belgian fuels was more or less acute according to the exchange value of the French franc, but when, in June, sterling exceeded the level of 100 francs, French coals began to get the better of the struggle and gradually pushed back the British coals.

Lower Prices Necessary

This struggle could not be carried on by French coal owners without some concessions in prices, especially in the areas where competition was keenest, and the consequence was that prices named were less and less advantageous to the French collieries. In order to improve the situation the operators considered reducing costs by revoking the supplement to the super-wage. The government stepped in and succeeded in having the supplement maintained at 20 per cent by granting the two following compensations to the French collieries: (1) Reinforcement, as from July 25, of the interdiction except by special permit of importation to France of German coals purchased on the free market; (2) reductions in rail rates on French coals shipped to destinations in the West or Middle West of France.

It is not likely, however, that these measures would have improved the situation much if the industrial revival due to the fall of the franc had not

manifested itself since the end of October.

The prices of industrial sorts were practically unchanged last year, having now been at the same level for three years, a unique occurrence in mining history. The only modification which the prices of these coals were subjected to was a small increase (of a few decimes) when the tax on business transactions was transformed into a tax on production and import.

French Imports Fall

The market for domestic coals has developed quite differently. It must be borne in mind that the output of French domestic coals is far from sufficient to cover the requirements of the country, making it necessary to resort to British, Belgian, Dutch and even German house coals. The high level attained by sterling last year, however, reduced purchases of British coals. As to German sized coals, this class of fuel constitutes but an extremely small part of the reparation deliveries.

The share of Belgian coals in the consumption of Parisian households has always been very important. But the fact that, after the fall of the French franc, Belgian producers exacted payment in Belgian francs, while payment in French francs was customary and as per contract, has cooled relations, with the consequence that the demand for Belgian coals by Paris coal merchants has momentarily decreased. Owing to the threatened severity of winter, however, it is not likely that Paris merchants will be able to preserve this attitude very long.

The Nord and Pas-de-Calais coal owners generally are following the selling methods of the Belgian producers, so that there is an almost constant difference between the prices of the sized products of both countries.

During the first eleven months of 1925 France received from the Ruhr 7,456,400 tons of indemnity fuels, a

monthly average of 677,858 tons. During the first two months, however, France was still transferring to Luxembourg a part of the tonnage received by her 763,000 tons in January and 747,600 tons in February. During the same period the O. R. C. A. (Office de Reparation des Cokes Allemands à la Grosse Métallurgie) received 2,948,000 tons of coke, which, of course, is included in the above figures.

From January to the end of October, 1925 (the latest statistics available), French collieries produced 39,869,000 tons of coal and lignite, as against 37,430,000 tons during those months of 1924. It is estimated that the output for the entire year will total nearly 48,000,000 tons, or 7,000,000 tons more than in 1913. As the production of the collieries situated in the part of Lorraine previously annexed to Germany will represent nearly 5,200,000 tons, the output of France within her 1913 limits last year exceeded by about 1,800,000 tons that of 1913.

Production Increases

The collieries of the Nord and Pas-de-Calais—some of which (notably Liévin) have not yet been entirely reconstructed—produced from January to the end of October, 1925, 23,802,000 tons of coal, an increase of 2,522,000 tons over the corresponding period of 1924.

Coke output by French collieries in the first ten months of 1925 totaled 2,510,000 tons, compared with 2,159,000 tons during those months of 1924. Production of coke-oven plants independent from the collieries, together with that of metallurgical works, was about 2,400,000 tons.

Of patent fuel the French collieries produced, from January to the end of October, 1925, 2,989,000 tons, as against 2,685,000 tons during the same period of the previous year. The plants outside of those attached to collieries are producing about 160,000 tons per month.

Coal imports during the first ten months of 1925 totaled 15,248,000 tons, as against 21,129,000 tons during the same period of 1924. The apparent decline of 5,881,000 tons from the preceding year is partly explained by the fact that the shipments from the Sarre—4,228,000 tons during the first ten months of 1924—were included in last year's figures, whereas in the last year this territory ceased to be considered separate from France proper in the customs returns.

Of the imports Great Britain supplied 8,335,000 tons compared with 11,122,000 tons during the same period of 1924; the United States, 180,000 tons instead of 317,000 tons, but Germany was responsible for 4,582,000 tons, as against 3,523,000 tons.

France imported 4,190,000 tons of coke from January to the end of October, 1925, as against 4,650,000 tons during the same period of 1924. Germany supplied only 3,523,000 tons, compared with 3,905,000 tons a year previous. Patent fuel imports were 1,036,000 tons, while they totaled 803,000 tons during the first ten months of 1924. Belgium supplied 555,000 tons instead of 318,000 tons; 144,000 tons came from Great Britain, instead of 103,000 tons and Germany's share was

reduced from 378,000 tons to 315,000 tons.

Inclusion of the Sarre in the customs returns for France explains why French exports of coal totaled 3,691,000 tons for the first ten months of 1925 compared with 1,813,000 tons during the same period of the year before. Coke exports decreased from 420,000 tons to 370,000 tons.

In October, 1925, the French collieries employed 305,318 men—216,513 underground and 88,805 on the surface—as against 302,771 men in October,

1924 (214,221 and 88,550, respectively).

At this writing industrial activity has caused a revival in the consumption of industrial coals and severe weather has considerably increased the consumption of domestic coals. The latter are advancing steadily, and if cold weather is prolonged, it would not be surprising to see the prices of domestic coals reach and even exceed their war and post-war record level. As to French industrial coals, they will certainly be increased in price during the first quarter of 1926 due to high fiscal charges.

about 10c. on the average all categories of mining labor.

The 7-hour day in mining, which the revolution instituted and the collapse of the passive resistance in the Ruhr obliterated for the time being, is still the chief bone of contention in the labor situation, but demands for its restitution are advanced with visibly less ardor. With German industry heavily taxed and still burdened with the sins of neglect committed during the inflation period there is little chance that working hours will again be shortened in accordance with the demand of labor.

Nothing signifies the change in the coal situation more strongly than the changed attitude of operators toward the reparation tribute of coal. It will be remembered that only a few years ago the size of this tribute was felt to be exorbitant. Operators now would gladly see restored a reparation supply as large as that which was indirectly the cause of the Ruhr occupation. The quantity, which is now settled under the Dawes plan, in 1925 was considerably below that of 1924, when it totaled about 7,000,000 tons of coal and 2,700,000 tons of coke. Exact figures for the last year are not yet available. The estimates are generally accepted.

The year 1925 was conspicuous for the shrinkage of coal imports, chiefly at the expense of Polish Upper Silesia. The facilities given this formerly German field for import into Germany under the terms of partition have ceased, with the result that the imports there have greatly diminished. The following figures represent the coal imports into Germany from January to October, 1925 (later figures not being available at the time of writing), with those of the three preceding years attached for comparison:

German Coal Imports, January-October
(In 1,000 Metric Tons.)

	1925	1924	1923	1922
Bituminous coal.....	6,476	10,912	21,806	9,327
Brown coal.....	1,863	1,650	1,246	1,880
Coke.....	61	309	1,265	222
Patent fuel				
Bit. coal.....	37	132	125	20
Brown coal.....	125	65	46	30
Totals.....	8,562	13,068	24,488	11,479

The chief countries of origin were Great Britain and Polish Upper Silesia. But whereas imports from Great Britain retained a level of about 400,000 tons monthly and even showed a tendency to rise during the later months of the year, shipments from Upper Silesia, which in 1924 averaged 500,000 tons per month had in October, 1925, dropped to 2,381 tons.

At the beginning of 1925 exports gave promise of considerable expansion but later on showed signs of weakness, with the result that last year's figures probably were not equaled. Comparative figures for the first eleven months are as follows:

German Coal Exports, January-October

	1925	1924	1923	1922
Bituminous coal	11,601	12,680	975	4,801
Brown coal.....	27	25	11	13
Coke.....	3,033	497	214	785
Totals.....	14,661	13,202	1,000	5,599

German Coal Output Climbs in 1925

Market Nears Overproduction State—Prices Steadiest of Any Year Since War—Strikes Give Way to Conciliation—Imports Shrink—Exports Gain

By H. O. Herzog

The outstanding feature of the German coal market in 1925 no doubt was the transition from a state of shortage of supply to one almost approaching overproduction. The beginning of the change was noticeable more than a year ago, but was then looked upon as only a passing phase. The year just closed, however, revealed that this condition is likely to persist for some years to come.

During the period of shortage up to the end of the Ruhr occupation measures were taken in all fields to increase the capacity of the mines and when, after the collapse of the passive resistance of the Ruhr, the operators succeeded in largely restoring the pre-war working time and pre-war working conditions the mines were ready to produce on a larger scale than theretofore. Had it not been for the syndicates, which in time checked the tendency toward expansion, even at the risk of endangering their own position against the advance of progressive operators, a state of overproduction doubtless would have resulted. In fact the renewal of the syndicates during the past year met with considerable difficulties. The Ruhr syndicate could be extended only under pressure from the side of the government and at considerable concessions to the members in the way of individual freedom of action, which, especially in the matter of export, has resulted in a considerable loosening of the rigid framework of the syndicate organization.

Private Initiative Helpful

When the almost disastrous business depression which held Germany under its sway during the whole year is considered it is astonishing that the coal production of 1925 shows no diminution compared with 1924 but even a considerable increase. This fact is due no doubt, to the reorganization of the sales machinery, of the syndicates on the lines of up-to-date business methods and the freedom given to private initiative.

Total German coal production in 1925 up to the end of November (December figures not being available at the time of writing) was as follows:

German Coal Production
January-November, 1925

	(In 1,000 Metric Tons)		1913	
	1925	1924	1913 Present Size	1913 Germany Within Pre-War Frontiers
Bituminous coal.....	121,362	107,596	130,048	175,945
Brown coal.....	127,077	112,025	79,742	79,742
Coke.....	24,577	21,332	26,986	29,470
Patent fuel				
Bit. coal.....	4,547	3,390	5,090	5,382
Brown coal.....	30,711	26,515	19,684	19,684
Totals.....	308,274	270,858	261,550	310,223

Production figures by months show slight fluctuation except for a decrease of about 10 per cent from May to June, due to curtailment of syndicate rations. Reserves at pitheads, which at the beginning of 1925 had accumulated to approximately 8,000,000 tons, kept at that total up to the early months of the fall and at the end of the year were estimated at between 5,000,000 and 6,000,000 tons.

Coal prices remained almost stationary throughout the whole year, the first time since the beginning of the war. The level at which they have settled lies about 25 per cent above that of 1913-14. Ruhr fat run of mine, which is the key grade of the schedule of prices, kept at \$3.57 per metric ton, and furnace coke, the key grade of coke, at \$5.71 up to September, when it was reduced to \$5.55.

Labor conditions in coal mining on the whole were satisfactory. The strike fever has greatly abated and in the last year boards of conciliation were able to settle all disputes, chiefly by a policy of compromise. In general it may be said that the past year contributed a good deal to the consolidation of labor conditions.

Wages during the year showed a slight upward tendency. The average pay of all classes of mining labor in the Ruhr in January, 1925, was \$1.50 per shift, in other fields somewhat less. In the Lower Silesia field, where the lowest wages prevail, \$1 per shift was paid in January, 1925. The wages of a getter, the highest paid category, were in January \$1.78 in the Ruhr and \$1.14 in Lower Silesia. By the end of the year these wages had increased by

A striking feature is the increase in exports of coke, which since 1924 have increased over 500 per cent. The chief countries of destination of exports were Holland, which alone absorbed 5,681,743 tons, or about 40 per cent of the total; France, with 1,354,964 tons or 11½ per cent; Belgium, with 1,136,877 tons, or 10 per cent. As regards coke the chief destinations of exports are Luxemburg and Alsace-Lorraine, showing that the German supply of coke is gradually dropping into the old channels.

To the German coal sales fraternity the year just past was almost disas-

trous. The large increase in the number of coal dealers compared with pre-war times and the establishment of co-operative societies, which have taken in hand the supply of coal to large groups of consumers, reduced the quantity of coal handled by individual firms of the trade to such a degree that cut-throat competition resulted, which in numerous cases led to bankruptcy, chiefly in the case of firms which sprang into life during inflation times. The trade owes enormous sums to the syndicates which are bound to sustain considerable losses if the deflation crisis, now in full swing continues.

British Columbia coal mines operated fairly steadily in the face of very considerable difficulties. In 1925 these mines produced 2,753,000 tons of bituminous coal; in 1924 the output totaled 2,193,667 tons.

New Brunswick contributed 203,000 tons of bituminous coal and Saskatchewan added 459,000 tons of lignite to the total for Canada. Production statistics by provinces for the past two years are shown in the table accompanying this article.

Total imports of coal into Canada during 1925 totaled about 16,780,000 net tons, compared with 16,828,578 tons during the preceding year. From the United States Canada obtained in 1925 more than 16,150,000 tons, including 3,250,000 tons of anthracite and 12,900,000 tons of bituminous coal. Imports from the United Kingdom added another 635,000 tons, of which 70,000 tons was bituminous and the remainder anthracite.

More coal was exported from Canada during 1925 than in the preceding year; it is estimated that exports totaled upward of 840,000 tons in 1925 as against 775,246 tons in 1924.

Employment in coal-mining during the year fluctuated greatly in the eastern area, where about 12,000 men usually are at work; during the summer months the number dropped to about 3,000. In the western fields the number of coal miners at work varied

Canada's Coal Industry Held Back By Labor Unrest

Nova Scotia Disturbances and U. S. Anthracite Suspension
Prove Unsettling Influences—Output Falls Below
1924 Total—Recovery Sets in Early

By S. J. Cook

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Dominion Bureau of Statistics, Ottawa, Canada

Canada's coal output in 1925 dropped below the total reported in the preceding year, due largely to losses sustained through labor troubles in the eastern maritime provinces in the earlier part of the year. Production amounted to a little better than 13,000,000 tons, as compared with 13,638,197 tons mined in 1924. Depression during the first three or four months of the year, always noticeable, carried the output to a lower mark in April than had been reached in several years. On the other hand, the recovery in 1925 set in earlier than in most other years, for from May to December there was an upward trend in the output curve.

Nova Scotia mines, in which output losses were greatest, produced only 3,900,000 tons of coal in 1925, compared with 5,557,441 tons in 1924, and yielded first place among the coal-producing provinces to Alberta. Distressing conditions prevailed at the Nova Scotia collieries during the earlier months; lack of continuity in employment precipitated labor troubles; strikes and general unrest followed by actual want drove many miners to migrate and created one of the most difficult industrial situations that has occurred in Canada in many years.

Following a general election in which the defeat of the party in power was brought about, the coal-mining situation became the chief topic of interest. The new government appointed a royal commission with wide powers of inquiry; the men returned to work on a temporary agreement pending the findings of the royal commission, and the output of coal grew steadily until the close of the year. It is considered that the commission has done its work thoroughly; great in hope and expectations, those interested await the publication of the report.

Western mines made a better showing in 1925 than in the preceding year when labor troubles in District 18 restricted output. Restoration of coal shipments to Winnipeg and other Eastern points marked an advance in mar-

keting over the previous year, when much of the advantage won in 1923 was lost. Attempts to ship coal east from the western provinces in 1925 did not meet with great success, though some experimental shipments were made

Output and Value of Coal in Canada by Provinces in 1924 and 1925

Province	1924		1925	
	Tons	Value	Tons	Value
Nova Scotia	5,557,441	\$22,280,554	3,901,000	\$16,068,000
New Brunswick	217,121	932,185	203,000	805,000
Saskatchewan	479,118	886,668	459,000	865,000
Alberta	5,189,729	18,884,318	5,706,000	19,600,000
British Columbia	2,193,667	10,601,998	2,753,000	11,686,000
Yukon	1,121	8,265	.....	.....
Totals	13,638,197	\$53,593,988	13,022,000	\$49,024,000

with a view to determining solid train-load costs of transporting coal from Alberta to Ontario.

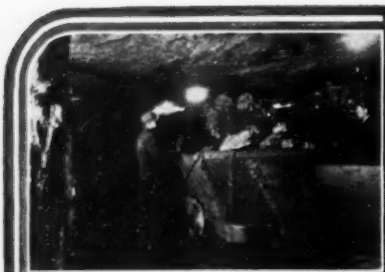
Alberta's output of 5,700,000 tons placed that province in the premier position among Canada's coal-producing areas, and marked an increase in output that was very gratifying. In 1924 Alberta mined 5,189,729 tons of coal.

from 11,000 to nearly 18,000 at different times during the year; employment was much more continuous than in 1924.

Approximately \$146,000,000 capital is invested in Canada's coal mines and the value of the output has at times reached a total above \$82,000,000 annually, but in 1925 was \$49,000,000.



Lota Harbor on the Bay of Arauco, Part of the Chilean Coal Field



News Of the Industry



Harrisburg and Washington Hold Attention in Hard-Coal Difficulty; Pro- and Anti-Pinchot Bills Appear

Harrisburg and Washington replaced New York City as centers of interest in the anthracite strike situation last week, following the second break in joint conferences at the Union League Club on Jan. 12. The next day the Pennsylvania Legislature met in special session pursuant to the call issued by Governor Pinchot after the operators had rejected his eleven-point "peace" program. Two bills drafted by Attorney General George W. Woodruff and sponsored by the state administration were presented to the House on the opening day and two anti-administration measures on coal were offered in the Senate.

The first administration bill would amend the Public Service Commission law by including anthracite producers in the category of street-car companies, telephone, gas and other public utilities subject to the jurisdiction of the commission. Enactment of the measure, it is asserted would give the commission wide investigatory powers over the business of the producers and would make prices open to complaint and attack before the state board. Anthracite producers, as defined in the bill, include "all persons, partnerships, unincorporated associations or corporations engaged in the production, preparation and making ready for market of anthracite coal for domestic use and in the sale of such coal."

Would Regulate Retail Trade

The second administration bill requests the Governor to negotiate compacts with anthracite-consuming states to provide for the regulation of retail trade in hard coal. This bill declares the anthracite business to be "affected with a public interest." All compacts under the terms of the proposed law would be submitted to the General Assembly for ratification. The consent of Congress, of course, would be necessary before these interstate compacts were valid.

Governor Pinchot, in discussing these bills, said:

"For many weeks we have read in the newspapers the daily story of the strike of the anthracite operators against the public. Yesterday came the breakdown of the negotiations because the operators refused to do as the miners had already done—make real concessions from their original position in the interest of reaching a settlement.

The matter now comes before the Legislature of Pennsylvania for its action. I shall do my best to press the bill which recognizes anthracite as a public utility. That is the next step."

One of the anti-administration bills, introduced by Senator George Woodward, of Philadelphia, calls for the amendment of the miners' certificate law. Under existing law, enacted in 1889, applicants for certificates must have had two years' experience as miners' laborers and must pass the scrutiny of an examining board of nine miners. This law, it is asserted, creates a union labor monopoly because only union members can be employed as helpers and so qualify for a certificate.

The Woodward amendment would waive the two years' experience in the anthracite mines and grant certificates to applicants who answer "intelligently and correctly at least twelve questions in the English language pertaining to the requirements of a practical miner." The examining board is reduced from nine to three, with only two signatures necessary to validate a certificate. This examining board would consist of a miner, an operator or mine superintendent and a mine inspector.

The second bill, fathered by Senator Patrick F. Joyce, of Luzerne County, would repeal the anthracite tonnage tax law of 1921. "It is the opinion of the Legislature," reads the preamble, "that the existing tax on anthracite coal and its consequent effect on the price thereof to the public is one of the chief elements entering into the continuation and prolongation of the strike, and that the repeal of the said tax would hasten the end thereof."

The Woodward bill was given favorable consideration by the Senate committee on mines and mining, but no action on the Pinchot proposals was taken by the House committee. In the opinion of many observers, the Governor's regulatory program is foredoomed to failure. Some also express the opinion that the Legislature will take no final action on the Woodward bill, which already is being bitterly attacked by the miners.

At the session on Jan. 18 three additional measures were introduced in the House. As an offset to the Woodward bill Representative John E. Stavitsky, of Luzerne County, a member of the United Mine Workers, offered an amendment to the present law which

would make illegal the employment of uncertified miners, prevent the sale or transfer of certificates and change the make-up of the examining boards along lines suggested by the Woodward bill.

The two other measures were resolutions aimed at a termination of the strike. One would create a Presidential commission to sit in the region and make binding findings. Pending the promulgation of its report, miners would be ordered to work at the old wages. The second resolution proposed a commission of six state legislators and three commissioners named by the Governor to invite operators and miners to resume negotiations.

A flurry over the possibility of federal intervention developed late last week when five Congressmen from the anthracite district conferred with Secretary of Labor James J. Davis. Following the conference, however, the Secretary stated that there had been no change in the attitude of the administration at Washington. Earlier in the week the operators had announced that they would respond to any invitation from the President to confer on the situation. On behalf of the miners, however, it was stated that they would acquiesce in no suggestion from Washington that their differences with the producers be submitted to arbitration.

More Coal Bills in Congress

The collapse of the Union League Club conferences also encouraged the introduction of more coal control bills in Congress. Senator Royal S. Copeland (New York) introduced a resolution on Jan. 15 to authorize the President to take such steps as might be necessary to bring about a speedy resumption of mining, and the next day, when immediate consideration of the proposal was refused, introduced a resolution directing the President to take over and operate the anthracite mines during the present "emergency" and to continue such operation and supervision "for the duration of the present strike," but not beyond June 1, 1928.

In the discussion on the floor of the Senate on the Copeland proposals on Jan. 16, it was argued that a Constitutional amendment would be necessary before Congress could take effective action. This idea was pressed by Minority Leader Robinson. Senator George W. Pepper (Pennsylvania) declared that the Copeland resolution of Friday would aggravate the situation and characterized it as a "legislative sob." Senator James A. Reed (Missouri) commended the "hands-off" policy of the administration as in consonance with the law.

Senator Tasker L. Oddie, chairman of the Senate committee on mines and

Wage Cut and Abolition of Check-Off Demand Urged by Nova Scotia Royal Coal Commission

That the Nova Scotia miners should accept a 10 per cent wage cut from the 1924 scale, as demanded by the operators (the British Empire Steel Corporation) a year ago; that there should be semi-annual wage revisions; that the company acknowledge the United Mine Workers; that the "check-off" system of collecting union dues be abolished are among the findings of the royal commission appointed by the Nova Scotian Government to probe the coal-mining industry.

The results of the inquiry which was conducted by Sir Andrew Rae Duncan, of England; Major Hume

Cronyn, London, Ont., and Dr. H. F. McPherson, Antigonish, Nova Scotia, and lasted two months, were made public last week.

It is recommended that the corporation-owned houses be sold to the miners and the corporation's private police force be abolished. A two-year wage contract is suggested as a means of stabilizing the industry, and sanitation and roads in the mining district should be cared for by the municipalities and government.

Coking plants are recommended throughout the country, so that Nova Scotian coal may have a wider market.

mining, explained that he was not pushing his bill forward at this time because he felt it would embarrass a situation "already full of embarrassment." On Monday of this week, however, the Senator conferred with the President. At the conclusion of the Coolidge conference, Senator Oddie stated that he had been given no assurance that the administration would indorse his bill. Later the Senator also called on Secretary Hoover. The Oddie bill has been under study by the Department of Commerce for several weeks, but no report has as yet has been made public.

Representatives John J. Boylan and Sol. S. Bloom (New York), authors of bills for emergency operation of the mines by the government, criticised the House committee on interstate and foreign commerce for its failure to order early hearings on the various coal bills which have been referred to it. On Jan. 18, Representative Boylan made public a letter from Representative W. F. Oldfield, Democratic whip, indorsing the Boylan measure.

Complete indorsement of the position of the union subscale committee was given Mr. Lewis and his associates at a meeting of the full scale committee at Hazleton, Pa., on Jan. 14. At that meeting the international president pledged the full resources of the organization in supporting the strike. Demands from some of the local unions that maintenance men be withdrawn were turned down by the committee, which also scouted the idea that any operators would attempt to reopen the mines without an agreement. On Sunday Mr. Lewis began a speaking tour of the region.

"Woeful Waiting" Region Attitude

In the anthracite region civic organizations, peace committees, self-appointed mediators, the miners and the operators alike appear to have assumed an attitude of watchful waiting. New peace plans are met with apparently no concern by either the public or the contending factions. The general atmosphere is one of coma. The agencies which in the past strived so desperately to bring about a settlement have given up in disgust. All appear to be awaiting the arrival of some inspired peace-

maker who can give the miners what they want without refusing the requests of the operators.

The suffering among the strikers continues to increase as the relief organizations, due to lack of funds, are forced to curtail their work. Strike benefits are not being paid. Relief in the form of a few dollars every fortnight is distributed by the district unions. It is not organized relief, however, and does not succeed in its purpose.

The residents of the region are at their wits' ends to obtain hard coal to heat their homes and prepare their food. Substitute fuels are lacking and anthracite is doled out under supervision that makes it practically unavailable. It is necessary to supply proof of illness in the home, in many instances, before retailers will deliver coal from their depleted stock piles.

"Bootleg" coal, selling as high as \$17 a ton, can be obtained from questionable sources. In many cases it is unburnable.

The corner grocer who has carried the striking miner on his books is himself looking vainly for credit. The big department stores and business houses are pleading for extensions on their own credit accounts. A demoralization of the entire region is threatened.

British Labor Would Nationalize Mines

An elaborate plan for the nationalization of power production and the entire coal industry of Great Britain has been laid before the Coal Commission as a panacea for the ills of these industries in the future. The Miners' Federation, the Central Trades Council and the Labor members of Parliament support it. The scheme calls for a distribution of government stock to recompense the mine owners for the value of their properties, a special compensation commission to decide how this stock should be redeemed—possibly from a sinking fund created by profits from the government industries. Three permanent commissions would be appointed, one to control general policies of power and transport, one to control operation of the mines and the third to regulate prices and distribution.

Cosgrove-Meehan Takes Over Dilltown Mine

The Cosgrove-Meehan Coal Corp. acquired the entire holdings of the Dilltown Smokeless Coal Co., at Dilltown, Indiana County, Pa., last week, the deal involving \$575,000. The purchase included 1,378 acres of coal lands, the mine and its equipment and the housing for employees at Dilltown Heights. The Dilltown operation now has a daily capacity of 1,000 tons and this will be increased. The mine will be known as Thermal No. 15 of the Cosgrove-Meehan Corp. and this added production will make the corporation one of the largest in the central Pennsylvania field, with operations at Johnstown, Portage, Barnesboro, Foustwell, Boswell, Cosgrove and Acosta, in Pennsylvania, and at Marion, Johnson City, Pittsburg, Paulton and Panama, in Illinois.

The negotiations were closed by John C. Cosgrove and Harry Meehan for the purchasing company and Earl E. Hewitt, general manager at Dilltown. The mine, which is served by the Buffalo, Rochester & Pittsburgh and the Pennsylvania railroads, was opened twelve years ago and produces an excellent grade of Miller seam coal for domestic uses. The mine is electrically equipped, has shaking screens and picking tables and lends itself readily to loading prepared sizes of a hardness making them strongly competitive with anthracite. The workings are self-draining. There are fifty houses, with electric lights and water. Mr. Hewitt will remain as manager.

Organize Company to Mine Virginia Anthracite

W. H. Manss, of Baltimore and Chicago; Alexander Armstrong, formerly Attorney General of Maryland; W. O. Pierson, vice-president of the Union Trust Co., Baltimore; Charles H. Holtzman, Collector of Customs, Baltimore district; J. W. Edelen, president of the Enterprise Fuel Co., all of Baltimore, and E. C. Searls and W. Milnor Roberts, of Chicago, have organized the Great Valley Anthracite Corporation to develop hard coal mines in Virginia.

The new company has an authorized capital stock of 15,000 shares of no par value common, soon to be increased to 50,000 shares and \$300,000 of 7 per cent bonds.

Mr. Manss is president, Mr. Searls vice-president in charge of operation, Mr. Roberts vice-president, Mr. Armstrong secretary and general counsel, and Mr. Pierson, treasurer.

The Great Valley Corporation plans the expenditure of approximately \$125,000 in developing the initial unit in Virginia and expects to begin production early next summer. The property is located on New River adjacent to the Norfolk & Western and the Virginian Ry.

The Consolidation Coal Co. in the near future will construct about 1,300 miners' houses at its mining plants in southern West Virginia and eastern Kentucky.

Nation's Lawmakers Expect Negative Result From Pinchot Venture

By Paul Wooton

Washington Correspondent of *Coal Age*

The special session of the Pennsylvania Legislature is being watched with more than academic interest by the lawmakers on Capitol Hill who are concerned with coal. The fact that the state is working on the anthracite problem provides an effective bar to the consideration of any coal legislation by Congress pending the outcome of that effort.

Few expect more than a negative result from the Pinchot venture. However willing the people of New England may be to have anthracite declared a public utility, there is little expectation that Pennsylvania will place its major industry under drastic regulation largely for the benefit of other states. The keystone in the Keystone state is coal. The steel industry there rests not on native reserves of iron ore but on the state's superb coals.

It is thought certain a majority of the legislators will see that any regulation prescribed for anthracite sooner or later would have to be applied to bituminous as well.

Interest in the anthracite situation is enhanced somewhat by the circulation of a rumor on Capitol Hill that Governor Pinchot has encouraged President Lewis of the United Mine Workers to hold out against the demands of the operators by giving assurances that he could put through his anthracite legislation. The idea also is in circulation that in the event of failure to obtain satisfactory results at Harrisburg Mr. Lewis would bid again for federal intervention by renewing his threat to call out the soft-coal miners.

Federal Intervention Still Remote

The success which has followed its hands-off policy makes it seem certain that the executive branch will resist, more strongly than ever, any pressure intended to bring about intervention. While the failure of the Pennsylvania Legislature to do anything would be the signal for renewed efforts on the part of some members of Congress to obtain action, the chances are against success. By that time the winter will have been so far advanced that the problem will be less acute. The leadership in Congress is not convinced that the failure of the mine workers and the operators to reach an agreement makes their controversy a national issue. Apparently they are standing with the administration against a political settlement of a dispute that should be settled within the industry.

Despite the effort of Representative Boylan, of New York, to establish that the shortage of anthracite is responsible for much of the pneumonia and influenza, the preponderance of complaints reaching Washington seems to be coming from the rich and from the very poor. The former want anthracite regardless of cost because of its convenience, while the prevailing complaint of the latter seems to be the

Pittsburgh Coal Co. Opens Dickson Mine

"All's well at the Dickson mine" was the latest report of the Pittsburgh Coal Co., following the reopening of the seventh mine of the company in western Pennsylvania on the 1917 wage scale. This mine, located three miles from Imperial, in Allegheny County, on the Montour R.R., was started on Jan. 13 with 74 men at work. The division manager is Harry M. White and the superintendent is John Pasco.

Warden mine, near McKeesport, which was opened slightly more than a week ago, now has close to 200 men at work. The company also announced that there was a total of 1,410 miners at work at the seven operations of the company, following the reopening of the Dickson mine. This is the greatest number employed at any time since the first mine, Banning No. 2, was opened on Aug. 20, 1925.

Last week six mines loaded a total of 24,820 tons.

presence of soft-coal particles in the air which settle on freshly washed clothing as it hangs on the line. Mr. Boylan, however, says the effort to use substitutes is resulting in an "unbelievably high" death rate from asphyxiation and that "it is a question who appears in a more culpable light—Nero fiddling while Rome burned or the American Congress talking and debating comparatively trivial matters while our people freeze and die." He has introduced a bill proposing that the President "take temporary control of any or all anthracite mines and proceed with the mining of such coal until the emergency has passed."

Until recently the sponsors of the campaign for the use of substitutes were somewhat in doubt as to what would happen if the weather should get really cold. After two weeks of genuine winter weather, which prevailed recently throughout the anthracite-using region, their doubts as to that point have been set at rest. Substitutes now are available in abundance in all markets and prices of bituminous coal are lower than they were last October. A generally held opinion in Washington is that the public has won the strike and that with the country almost buried in soft coal there is no excuse for anyone's being cold.

Pittsburgh Coal Co. Promotions

William Lauder, of Elizabeth, has been promoted to the position of general superintendent of mines of the Pittsburgh Coal Co., officials of the company have announced. He was formerly division manager in charge of the Youghiogheny River valley section. Howard Burns, of Corliss has been named division manager to succeed Mr. Lauder and will establish his headquarters at West Newton. Mr. Burns formerly was mine inspector for the company.

Standards Board Approves Rock Dusting

The American Engineering Standards Committee has just approved as "Recommended American Practice" a safety code for rock-dusting of coal mines, developed under the sponsorship of the American Institute of Mining and Metallurgical Engineers, in close cooperation with representatives of the various national bodies interested, including state officials having regulatory power over the field in question, coal operators, labor, inspection, insurance, manufacturers of mine equipment, and the U. S. Bureau of Mines. The latter, as a leader in mine safety work, has conducted extensive investigations and experiments under the direction of Dr. George S. Rice, before advocating this method.

The chairman of the sectional committee for the formulation of the code is Howard N. Eavenson, consulting engineer.

The code prescribes the rock dusting of mines producing bituminous coal or lignite, whether gaseous or not, as they are liable to dust explosions. It specifies the kind and amount of dust to be used and the parts of the mine to be dusted. The methods of applying the dust and instructions for its sampling also are given.

The practice of wetting coal dust produced by coal undercutting machines and the drenching of the cars with a water spray while they are in transit are recommended as effective and economical ways to keep down the dust from these sources.

It has been conservatively estimated that about two-thirds of the fatal and serious accidents at the bituminous coal mines of this country could be prevented by the universal adoption of this safety method.

A report by Edward Steidle, supervisor of the co-operative coal mining courses at Carnegie Institute of Technology, who has been making a study of this subject in connection with the Bureau of Mines investigations, presents data on the increase in the use of rock dusting during the past year, which emphasizes the importance that coal mine operators place on the prevention of explosions. During 1924 only one company in America practiced rock-dusting on a large scale, but at present no less than 211 mines are rock dusted. However, this represents only about 4 per cent of the total number of bituminous mines in the United States.

Bain Off Advisory Committee

Dr. H. Foster Bain, former director of the U. S. Bureau of Mines and now executive secretary of the A.I.M.E., has sent in his resignation as a member of the advisory committee of Secretary Hoover, relating to reorganization of the Mines Bureau. It is probable that the vacancy will be filled by a representative of one of the several industries with which the Bureau deals and which is now unrepresented on the committee. There will be a meeting of this committee in late January, when Secretary Hoover will ask the committee to continue to function.

Gas Explosion in Open-Lamp Mine Kills 91 Men at Wilburton, Okla.

Ninety-one men are known to have lost their lives and three others are missing in an explosion in the Degnan-McConnell Coal Co.'s No. 21 mine, at Wilburton, Okla., early in the morning of Jan. 13. It is considered probable, by the authorities on the ground, that the blast was caused by the ignition of gas by men wearing open-flame lamps, State Inspector Edward Boyle having barred electric safety cap lamps from Oklahoma after a battle he carried into the courts.

Mr. Boyle blamed the accident upon incompetence of firebosses and ignorance of men employed since the region was converted to a non-union basis following a long struggle last summer.

lunch station at the mine. A Red Cross official and state troops arrived that night.

Eight men were brought out alive the night of the 13th, but two more, Cecil McKinney, white, and Beryl Holland, negro, were found wandering through the workings the next morning, both suffering from shock and exhaustion. The negro was so badly frightened he could not talk. Several negroes had refused to do rescue work underground the day of the explosion because it was the 13th, even though superstition was dealt a severe blow by the fact that the first eight men saved all had come out of the 13th east entry.

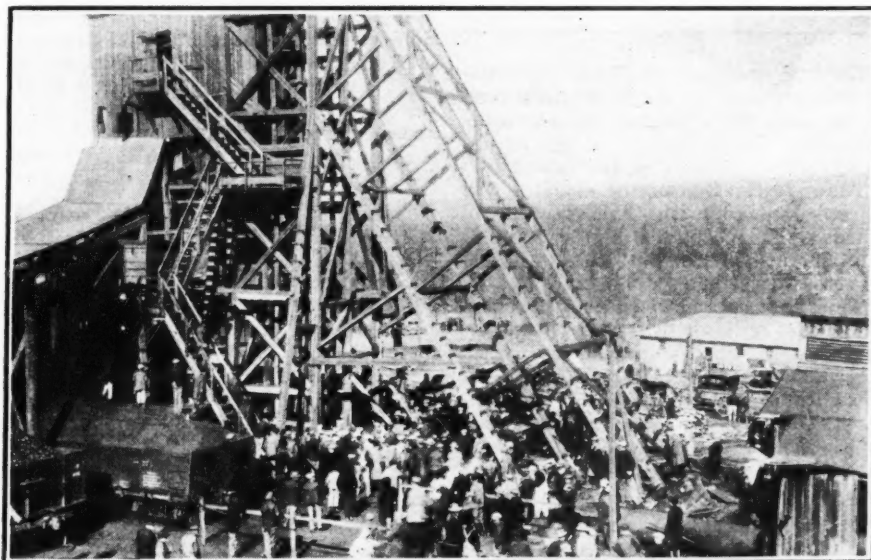
Union men throughout the country made much of the fact that experienced



This Group Helped Form Rescue Teams at the Wilburton Mine

miners who were on strike in the Wilburton region were barred from aiding in the rescue work by an injunction issued against strikers by Judge R. L. Williams several months ago forbidding them to enter company property.

Charles Buffo, superintendent of the Rock Island mines at Hartshorne, had teams in the mine from the first and William and Steve Ogilvie also were in charge of crews that alternated in the rescue and search work below the surface. Two weeks ago there was a squeeze in the mine, Superintendent W. H. Powers said. Work in the mine was stopped while airways were driven around it to provide ventilation for a section of the mine. A recurrence of this squeeze may have had something to do with the explosion, Powers said. Groping for another possible cause, State Inspector Boyle suggested that possibly a miner might have found an unfired shot, missed the night before, and touched it off.



Damaged Top Works of the Degnan-McConnell Mine

He had not yet entered the mine, however, when he made this charge. "Jim" McConnell, owner of the mine returning from Illinois, where he had gone to attend the funeral of a friend, at once issued a denial.

"Every gas man in the mine held a certificate," Mr. McConnell declared, "and the majority of the men who were at work had been there some time."

One hundred and one men, including A. P. Thomas, of Hartshorne, Okla., a mine surveyor, went into the mine at 7:30 on the morning of the explosion. Two inspectors had finished their rounds an hour and a half earlier and had reported no gas. Within an hour from the time the first cageful of men had descended the 200-ft. shaft and started down the long slope running from the bottom, the explosion occurred. It started a fire down the main slope and sent up a great column of black smoke from the shaft, drawing the inevitable crowd. Rescue crews from McAlester, Hartshorne, Haileyville and Krebs rushed to the scene, entering the mine under the direction of J. B. Hynal and W. H. Fleming, of the U. S. Bureau of Mines. They soon found 16 bodies. The Salvation Army opened a



Chief Owner of the Mine with National Guard Officers

"Jim" McConnell, of the Degnan-McConnell Coal Co., rushed home to Wilburton, Okla., from Illinois immediately after the explosion and helped direct rescue work while answering criticisms leveled at the company by the United Mine Workers, who last summer lost their grip on the Wilburton field.

Good Barricades Save Lives of 20 But 19 Die In West Virginia Blast

Twenty miners saved their lives after an explosion Jan. 14 in the No. 8 mine of the Jamison Coal & Coke Co., near Farmington, W. Va., by using their knowledge of how to build barricades and by keeping their heads. Nineteen men died, however, and about \$75,000 damage was done to the interior and equipment of the mine. The mine was not rock-dusted although the company had previously planned to begin rock-dusting on Jan. 15. A naturally moist condition in part of the mine was credited with reducing the force of the explosion, which was unofficially said to have been caused by an arc from a trolley nip igniting a body of gas. This, however, remains to be proved. The mine operates on a closed-light basis.

Thirty-nine men were in the mine at 10:20 p.m., when the blast occurred, starting, apparently, about 1½ miles from the shaft bottom. Eight men working near the bottom escaped at once. Rescue crews from various northern West Virginia coal companies soon penetrated the workings searching for the rest of the night force under the direction of William Rigglesman, of Fairmont, a state mine inspector. Robert M. Lambie, chief mine inspector, was soon on the ground. While the force of the explosion hardly reached the outside and therefore did no damage to the shaft and top works, it was early realized that the loss of life might be heavy because only the first eight men came out. By 5 o'clock the next morning four bodies were brought out, including those of William E. Myers, of Fairmont, and his son Herbert.

Hope for the remaining men was steadfastly held, however, as the rescue workers penetrated deeper and deeper without finding many more bodies. This belief was strengthened, when the searching party at 5:45 o'clock Friday evening, Jan. 15, came across a board bearing what was intended as the entombed miners' farewell message: "Some at stable and at 90 R shanty. So long."

"Jock" McNeil, 60 years old and a compressor engineer, was the real hero, as he directed the work of erecting a barricade behind which the miners were found. McNeil and Lee Fetty had rushed sixteen men into a stable and four into a shanty.



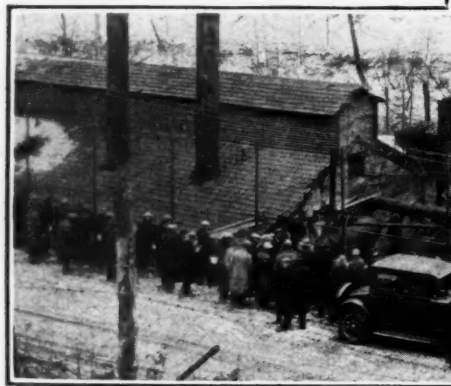
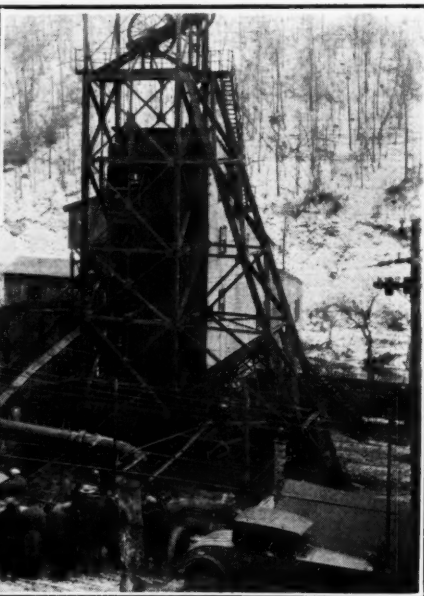
Fred W. Lukins

The "farewell message" on the board led the searchers to the imprisoned men 23 hr. after the men had sealed themselves in. The board is now one of the cherished possessions of the company.

The investigation of the disaster was started Jan. 16, with Chief Lambie in charge. The coroner's jury will meet Jan. 29, at Charleston. The mine is expected to resume work next week.

Something brand new in West Virginia coal mining will be tried, Mr. Lambie said, when work will be started next Monday to sink holes 10,000 ft. in advance of the present development of the Jamison mine to force the gas out by means of a vacuum. These will be extended to points 8 ft. below the coal so that the underlying as well as the overlying seam of coal may be tapped. It is believed that this will solve some of the problems incident to the mining of this gas coal.

Mr. Lambie says that the rescue trucks for the purchase of which Gov. Howard M. Gore managed to have the Legislature appropriate \$20,000 saved the day. They rendered quick service.



Top Works of the Jamison Coal & Coke Co.'s No. 21 Mine Were Little Damaged by the Jan. 14 Explosion

Fred W. Lukins Dead at 70; In Coal Trade 40 Years

Fred W. Lukins, for four years ending in 1920, president and a director of the Southwestern Interstate Coal Operators' Association, died Jan. 14, at Springfield, Mo., after a two months' illness following an attack of typhoid fever. He was 70 years old. Last year he severed his connection with the coal industry and retired to his ranch near Chadwick, Mo.

For forty years Mr. Lukins was engaged in mining and selling coal in Illinois and Missouri. In Illinois he was general manager of the O'Gara Coal Co., with headquarters at Virden, Ill. From 1914 until he moved to his ranch Mr. Lukins had lived in Kansas City, Mo., where he operated the Farmers' Fuel Co. and the Waverly Coal Co., with mines in Missouri.

In 1917 Mr. Lukins was elected a director of the National Coal Association, the only connection with the coal industry he retained after his retirement last year. In 1923 he was a member of the bituminous coal operators' special committee of the National Coal Association, which represented the coal industry before the U. S. Coal Commission.

Bureau of Mines Abolishes Urbana (Ill.) Station

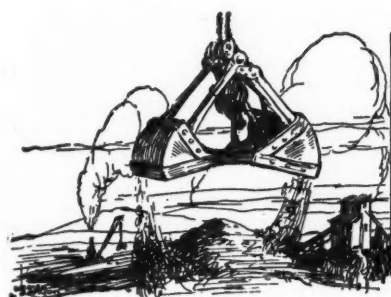
The University of Illinois station of the U. S. Bureau of Mines, Ceramics Building, Urbana, Ill., was discontinued Dec. 31, 1925. According to word received at the Bureau, this is part of a general movement of the Department of Commerce to cut down expenses.

The University of Illinois office was first opened as a mine-rescue station in 1908. In 1917, during the war, it was changed to a mining experiment station and had remained the same since. L. D. Tracy, superintendent of the Bureau, has held that office since December, 1922. He was preceded by C. A. Holbrook, now dean of the School of Mines, State College, Pa., and J. J. Rutledge, now chief of the Bureau of Mines of Maryland. Experiments and investigations have been carried on by the Bureau since it was first installed and nine bulletins and seven technical papers have been written and published on material gained through these investigations and experiments.

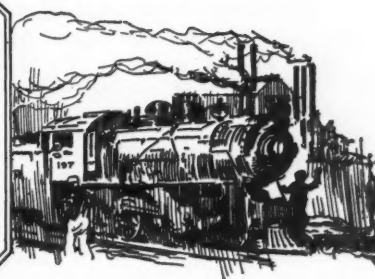
Three Tennessee Companies In \$30,000,000 Merger

The Tennessee Products Corp. is the name of a new company formed Jan. 16 by the merger of the Bon Air Coal & Iron Co., Nashville, Tenn., with the Chattanooga Coke & Gas Co. and the J. J. Gray, Jr., properties, of Rockdale, Tenn. The new organization will have a capital stock of \$30,000,000, an increase of \$10,000,000 over the capital of the Bon Air company.

James R. Offield, president of the Bon Air company, took an active part in bringing about the merger. William Wrigley, Jr., Chicago capitalist and father-in-law of Mr. Offield, is nominally interested in the consolidation.



Production And the Market



Demand and Prices for Soft Coal Stronger; Anthracite Substitutes Spurt

Whatever conflicting emotions or conditions may pervade the coal market—and in the complicated conditions of the last year there have been many—an un-failing stimulus to action is cold weather such as has been fairly widespread during the last week. No doubt a few snowstorms, with an occasional blizzard, would not be amiss in the trade's scheme of bigger and better business, but these are not without their serious drawbacks in the shape of disarranged transportation and inadequate equipment.

Another development responsible in some degree for the renewal of activity in soft coal was the abandonment, at least temporarily, of the policy of watchful waiting when the hard-coal peace negotiations were broken off. While the influence of demand from this direction is growing in importance it has not thus far had a very great effect on the coal trade as a whole since the anthracite mines suspended operation, because an unusually large number of consumers laid in a comparatively large proportion of their winter needs before the strike began.

Heavy Output Counterbalances Demand

The improvement in the market situation is reflected in much greater firmness in prices rather than in any notable advances. That quotations have remained comparatively stationary in the face of recent betterment in conditions is due to a rebound in production, which is again close to some of the high marks of past years, following the usual dip caused by curtailment of operations during the holiday weeks. The quick response of output to the temperature, with the inevitable result that prices just as rapidly get no better, has in the last few months been a recurrent cause of chagrin to those

hit hardest by the depression that set in soon after the signing of the Jacksonville scale. The splendid performance of the railroads since output began to hit the high spots has played an important part in stabilizing prices and enabling operators to move their product without delay.

As general business conditions are sound and industrial operations are beginning to hit their stride again after the holiday lull, prospects are brighter than for some months.

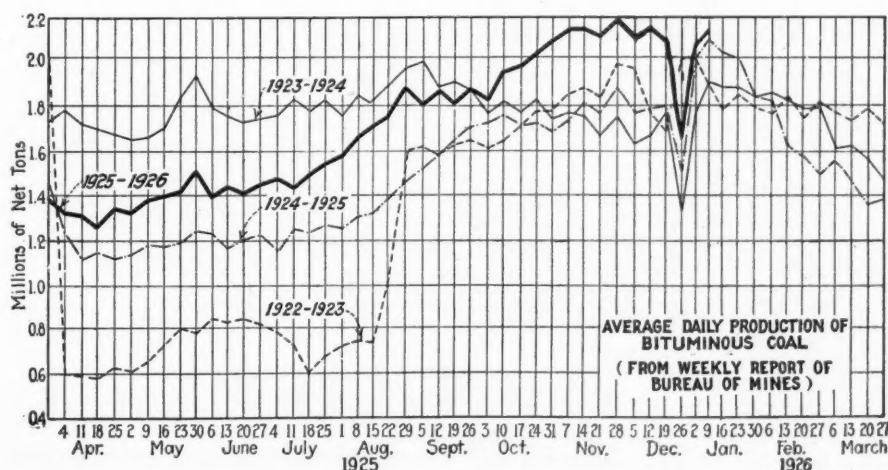
Revival in Demand for Coke

With the abrupt termination of anthracite peace negotiations, indefinitely postponing settlement of the strike, renewed strength marks the demands for hard-coal substitutes, particularly coke, the price of which has been steadily on the upgrade since the parley broke up.

Bituminous coal output during the week ended Jan. 9 is estimated by the Bureau of Mines at 12,883,000 net tons, a total exceeded but once since late in 1920, 12,914,000 tons having been produced in the week ended Dec. 12 last. The revised total production for the calendar year 1925 is 522,967,000 net tons. Production of anthracite during the week ended Jan. 9 was about 47,000 net tons, compared with 64,000 tons in the preceding week, according to revised figures.

Coal Age Index of spot prices of bituminous coal on Jan. 18 stood at 181, the corresponding price being \$2.20, compared with 180 and \$2.18 on Jan. 11.

Dumpings of coal at Hampton Roads made a sharp rebound during the week ended Jan. 11, the total being 433,560 net tons, compared with 339,761 tons in the preceding week.



Estimates of Production

(Net Tons)

BITUMINOUS

	1924-1925	1925-1926
Dec. 26.....	7,546,000	8,431,000
Jan. 2 (a).....	10,810,000	10,667,000
Jan. 9 (b).....	12,590,000	12,883,000
Daily average.....	2,098,000	2,147,000
Coal yr. to date..... (c)	359,814,000	409,805,000
Daily av. to date.....	1,514,000	1,719,000

ANTHRACITE

Dec. 26.....	1,029,000	32,000
Jan. 2 (a).....	1,255,000	64,000
Jan. 9.....	1,785,000	47,000

BEEHIVE COKE

Jan. 2.....	257,000	293,000
Jan. 9.....	265,000	299,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Midwest Spurts a Little as Mercury Dips

A little spell of zero weather came to the rescue of the Middle West coal market early last week. The results were felt immediately in a better demand for domestic coal, as many dealers who had small reserves on hand rushed to cover and booked fairly heavily. The cold wave lasted only two or three days, but many operators accumulated quite a number of orders.

Steam coals have been offered much more freely in the last week and prices have slipped to a slight extent, although not enough to make much difference. This weakening came about entirely through better production. It is possible to move screenings and mine-run at a fairly reasonable price, but not even the most enthusiastic observer could say that the demand was strong. The industrial situation continues to be very satisfactory.

What little anthracite was in this territory is about used up. The cold weather brought this interesting fact to light in an unexpected demand for certain sizes of coke, southern Illinois coals, Indiana Fourth Vein coals and Pocahontas coals.

Labor difficulties in southern Indiana, where operators of co-operative properties locked horns with the United Mine Workers, apparently have been settled for the time being, but many people close to the situation are watching that field with some anxiety.

Seasonable weather is moving domestic sizes of coal in the Williamson, Franklin and Harrisburg fields. All mines are behind on shipments of lump, and egg is moving freely. The nut sizes, however, are slow and steam is heavy with a slight increase in demand as cold weather came on. Railroad tonnage is good and shaft mines are working five and six days a week. Car supply is good. Strip mines have had open weather and are working regularly six days a week and finding a good market, although their prices vary. In the Duquoin and Jackson County fields similar conditions prevail. There have been no changes in prices in any of these fields.

In the Mt. Olive field business is fairly good on domestic and steam is slow. Railroad tonnage is good. Working time is four and five days a week. In the Standard field there is a better movement but nothing to justify higher prices and most mines have "no bills," sometimes of domestic sizes but always of steam sizes. Railroad tonnage is reported light. The mines are getting four and five days a week. Prices are unchanged.

In St. Louis domestic business is reported to be good for middle-grade coals and Standard is moving fairly well, as is steam of the cheaper grades in smaller lots. The anthracite tonnage is cleaned out. There is a fair supply of smokeless and a fairly good demand. Coke is moving well. Country domestic is unusually good for middle and cheaper grade coals as well as for coals from

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern					Midwest				
	Market Quoted	Jan. 19, 1925	Jan. 4, 1926	Jan. 11, 1926	Jan. 18, 1926†		Market Quoted	Jan. 19, 1925	Jan. 4, 1926
Smokeless lump.....	Columbus....	\$3.85	\$3.55	\$3.85	\$4.00 @ \$4.25	Franklin, Ill. lump.....	Chicago.....	\$3.60	\$3.50
Smokeless mine run.....	Columbus....	1.90	2.85	2.95	2.65 @ 2.90	Franklin, Ill. mine run....	Chicago.....	2.35	2.50
Smokeless screenings.....	Columbus....	1.20	2.60	2.60	1.90 @ 2.10	Franklin, Ill. screenings....	Chicago.....	1.95	1.85
Smokeless lump.....	Chicago.....	4.00	4.00	3.85	3.50 @ 4.25	Central, Ill. lump.....	Chicago.....	3.10	3.10
Smokeless mine run.....	Chicago.....	2.00	2.10	2.10	2.00 @ 2.25	Central, Ill. mine run....	Chicago.....	2.20	2.30
Smokeless lump.....	Cincinnati.....	4.10	4.10	4.10	4.00 @ 5.00	Central, Ill. screenings....	Chicago.....	1.95	1.40
Smokeless mine run.....	Cincinnati.....	2.00	2.50	2.35	2.50	Ind. 4th Vein lump.....	Chicago.....	3.50	3.00
Smokeless screenings.....	Cincinnati.....	1.00	1.80	2.00	1.50 @ 1.75	Ind. 4th Vein mine run....	Chicago.....	2.35	2.30
*Smokeless mine run.....	Boston.....	4.30	4.60	4.85	4.75 @ 5.10	Ind. 4th Vein screenings..	Chicago.....	1.85	1.85
Clearfield mine run.....	Boston.....	1.95	2.00	1.90	1.75 @ 2.20	Ind. 5th Vein lump.....	Chicago.....	3.00	2.50
Cambridge mine run.....	Boston.....	2.30	2.30	2.25	2.15 @ 2.65	Ind. 5th Vein mine run....	Chicago.....	2.10	1.95
Somerset mine run.....	Boston.....	2.10	2.10	2.05	1.90 @ 2.35	Ind. 5th Vein screenings..	Chicago.....	1.70	1.40
Pool 1 (Navy Standard)...	New York.....	2.75	2.95	2.95	2.85 @ 3.25	Mt. Olive lump.....	St. Louis.....	3.00	2.85
Pool 1 (Navy Standard)...	Philadelphia..	2.80	2.95	2.95	3.00 @ 3.30	Mt. Olive mine run.....	St. Louis.....	2.35	2.00
Pool 1 (Navy Standard)...	Baltimore....	2.25	2.30	2.30	2.25 @ 2.35	Mt. Olive screenings....	St. Louis.....	1.80	1.75
Pool 9 (Super. Low Vol.)..	New York.....	2.15	2.30	2.30	2.25 @ 2.55	Standard lump.....	St. Louis.....	2.45	2.40
Pool 9 (Super. Low Vol.)..	Philadelphia..	2.20	2.30	2.30	2.40 @ 2.65	Standard mine run.....	St. Louis.....	1.95	1.80
Pool 9 (Super. Low Vol.)..	Baltimore....	1.85	2.15	2.15	2.10 @ 2.20	Standard screenings....	St. Louis.....	1.20	.85
Pool 10 (H.Gr. Low Vol.)..	New York.....	1.85	2.05	2.05	2.00 @ 2.30	West Ky. lump.....	Louisville...	2.60	2.00
Pool 10 (H.Gr. Low Vol.)..	Philadelphia..	1.85	2.05	2.05	2.20 @ 2.35	West Ky. mine run.....	Louisville...	1.55	1.35
Pool 10 (H.Gr. Low Vol.)..	Baltimore....	1.70	1.95	1.95	1.90 @ 2.00	West Ky. screenings....	Louisville...	1.10	.95
Pool 11 (Low Vol.).....	New York.....	1.60	1.75	1.80	1.75 @ 2.00	West Ky. lump.....	Chicago.....	2.60	2.25
Pool 11 (Low Vol.).....	Philadelphia..	1.65	1.90	1.90	2.00 @ 2.15	West Ky. mine run.....	Chicago.....	1.50	1.50
Pool 11 (Low Vol.).....	Baltimore....	1.50	1.70	1.70	1.70 @ 1.75				
High-Volatile, Eastern					South and Southwest				
Pool 54-64 (Gas and St.)..	New York.....	1.50	1.60	1.60	1.50 @ 1.70	Big Seam lump.....	Birmingham..	2.50	2.75
Pool 54-64 (Gas and St.)..	Philadelphia..	1.50	1.60	1.60	1.65 @ 1.70	Big Seam mine run.....	Birmingham..	1.50	2.10
Pool 54-64 (Gas and St.)..	Baltimore....	1.65	1.65	1.65	1.65 @ 1.70	Big Seam (washed).....	Birmingham..	1.60	2.30
Pittsburgh a'd gas.....	Pittsburgh...	2.35	2.65	2.65	2.60 @ 2.75	S. E. Ky. lump.....	Chicago.....	2.60	3.10
Pittsburgh gas mine run..	Pittsburgh...	2.10	2.10	2.10	2.00 @ 2.25	S. E. Ky. mine run.....	Chicago.....	1.50	1.85
Pittsburgh mine run (St.)	Pittsburgh...	1.95	2.05	2.05	2.00 @ 2.10	S. E. Ky. lump.....	Louisville...	2.75	3.00
Pittsburgh slack (Gas)...	Pittsburgh...	1.50	1.55	1.55	1.50	S. E. Ky. mine run.....	Louisville...	1.50	1.55
Kanawha lump.....	Columbus....	2.50	2.25	2.25	2.00 @ 2.50	S. E. Ky. screenings....	Louisville...	1.00	1.20
Kanawha mine run.....	Columbus....	1.60	1.70	1.70	1.55 @ 1.85	S. E. Ky. lump.....	Cincinnati...	2.60	3.10
Kanawha screenings.....	Columbus....	1.00	1.15	1.05	.85 @ 1.00	S. E. Ky. mine run.....	Cincinnati...	1.30	1.60
W. Va. lump.....	Cincinnati...	2.50	2.75	3.00	2.50 @ 3.00	S. E. Ky. screenings....	Cincinnati...	.90	1.10
W. Va. gas mine run.....	Cincinnati...	1.30	1.60	1.60	1.50 @ 1.60	Kansas lump.....	Kansas City..	4.85	5.00
W. Va. steam mine run....	Cincinnati...	1.30	1.60	1.50	1.50 @ 1.75	Kansas mine run.....	Kansas City..	3.35	3.10
W. Va. screenings.....	Cincinnati...	.90	1.10	1.10	1.00 @ 1.25	Kansas screenings....	Kansas City..	2.50	2.30
Hooking lump.....	Columbus....	2.50	2.35	2.35	2.25 @ 2.50				
Hooking mine run.....	Columbus....	1.60	1.85	1.85	1.75 @ 2.00				
Hooking screenings.....	Columbus....	1.15	1.25	1.20	1.15 @ 1.25				
Pitts. No. 8 lump.....	Cleveland....	2.40	2.30	2.30	1.85 @ 2.75				
Pitts. No. 8 mine run....	Cleveland....	1.85	1.80	1.80	1.80 @ 1.85				
Pitts. No. 8 screenings....	Cleveland....	1.40	1.50	1.45	1.35 @ 1.45				

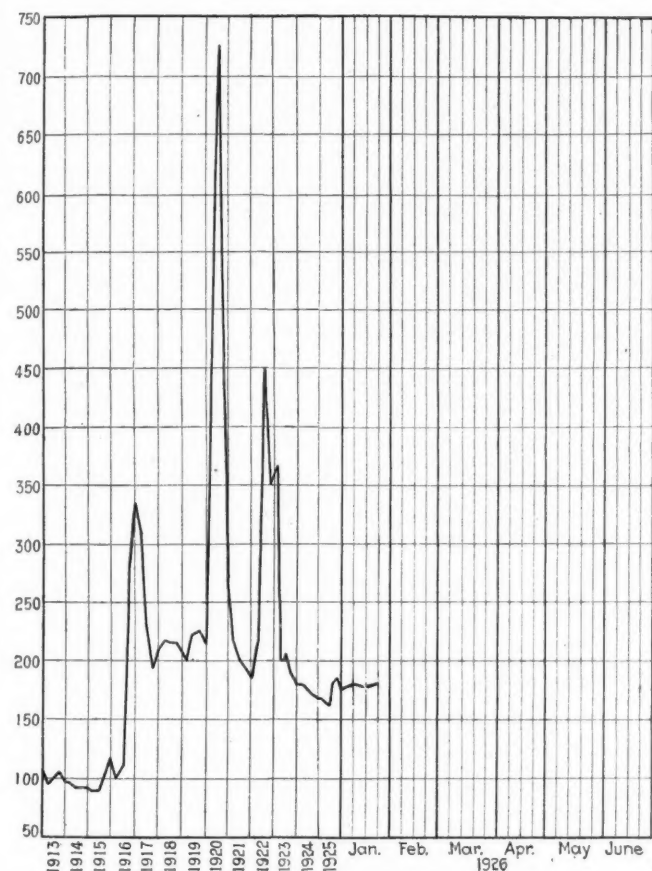
* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type; declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

		Jan. 19, 1925		Jan. 11, 1926		Jan. 18, 1926†	
		Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34	\$8.00 @ \$9.25				
Broken.....	Philadelphia..	2.39	9.15				
Egg.....	New York.....	2.34	8.75 @ 9.25				
Egg.....	Philadelphia..	2.39	9.45 @ 9.75				
Egg.....	Chicago.....	5.06	8.17 @ 8.40				
Stove.....	New York.....	2.34	9.75 @ 10.25				
Stove.....	Philadelphia..	2.39	10.10 @ 10.75				
Stove.....	Chicago.....	5.06	8.80 @ 9.00				
Chestnut.....	New York.....	2.34	9.75 @ 10.25				
Chestnut.....	Philadelphia..	2.39	10.00 @ 10.75				
Chestnut.....	Chicago.....	5.06	8.61 @ 9.00				
Pea.....	New York.....	2.22	4.75 @ 5.50				
Pea.....	Philadelphia..	2.14	5.75 @ 6.00				
Pea.....	Chicago.....	4.79	5.36 @ 5.75				
Buckwheat No. 1.....	New York.....	2.22	2.25 @ 2.75				
Buckwheat No. 1.....	Philadelphia..	2.14	2.50 @ 3.00				
Rice.....	New York.....	2.22	2.00 @ 2.35				
Rice.....	Philadelphia..	2.14	2.00 @ 2.25				
Barley.....	New York.....	2.22	1.40 @ 1.65				
Barley.....	Philadelphia..	2.14	1.50				
Birdseye.....	New York.....	2.22	1.40 @ 1.65				

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926	1925
Index	181	174
Weighted average price...	\$2.20	\$2.11

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

western Kentucky. Local wagonload steam is unusually good. Carload is fair and country steam is quiet. No change in local prices.

Small Orders Help Kentucky

Continued cold weather with snow on the ground has resulted in better retail business in Kentucky. Not much big business has been in the market, however, as many big concerns stocked heavily early in anticipation of high prices and short supplies on account of the anthracite situation. Inventory being fairly well over, more business is coming in, but not in especially large lots.

Industries are consuming steadily, even more brick companies running in bad weather than a few years ago.

Prices as a whole are little changed. In western Kentucky some operators are holding firmly for \$2.25 a ton for block, but it can be had as low as \$1.85; lump and egg, \$1.75@\$.2; nut, \$1.35@\$.150; mine-run, \$1.25@\$.150; screenings a shade weaker at 75c.@\$.10. Eastern Kentucky prices show best block at \$2.75@\$.3.25; egg and lump, \$2@\$.2.50; nut, \$1.75@\$.2; mine-run, \$1.40@\$.1.75; screenings, 90c.@\$.1.10.

Mines in eastern Kentucky are running on a fair schedule as a whole, a few being down for the time being, while western Kentucky is making a fair showing, and probably has had some business thrown to it from southern Indiana, where a number of mines have had labor troubles. Car supply is good in all sections, the railroads having performed well this winter.

Movement Picks Up in Northwest

Movement of coal from Duluth-Superior docks has improved substantially during the last ten days, thanks to colder weather and shipments on orders previously placed

for January delivery. Retailers and industrial consumers are still buying largely on an immediate-requirement basis, however.

The market is firm and unchanged for all bituminous coals. With the heavier movement of prepared sizes of bituminous coals the docks find themselves better supplied with screenings to cover orders on their books. Public utilities and mining companies are ordering mine-run and screenings mainly. Domestic coke is in active demand at \$8.50 and briquets are being offered at \$9.

Iron foundries and other plants over Minnesota and northern Wisconsin are operating more extensively than a year ago. Orders from iron mining companies on the Minnesota ranges have been bulking heavier since the beginning of the year due to mining and stripping programs having been broadened as the result of a brighter outlook in the iron and steel trade.

Car-lot shipments of anthracite were completely suspended last week. Remaining stocks, consisting of nut and egg, are held almost exclusively by three of the dock companies and they are being reserved for their retail yards at Duluth and Superior. Former anthracite consumers are getting along with Pocahontas and other smokeless bituminous coals, domestic coke and briquets.

Bituminous stocks on the docks as of Jan. 1 are estimated at 4,900,000 tons and it is figured that they will be ample to cover all needs up till the opening of navigation.

Milwaukee consumers of anthracite find that the small amount of hard-coal still on the docks belongs to those who contracted for it early in 1925 and must go to them when their bins require refilling. Pocahontas is being used as a substitute, and thus far the supply has been sufficient to meet the extra demand. But the coke makers seek direct business with the consumer, and have placed restrictions on sales to dealers, indicating that their stocks are being seriously reduced by the heavy demand from former consumers of anthracite. Thus far no restriction has been placed by retailers on the amount of coke that can be ordered by consumers at one time. Prices remain unchanged.

Southwest Trade Keeps Time with Mercury

The Southwestern market continues to dance to the weather man's fiddling. A week ago, with the thermometer under 20 deg., it was doing a fair imitation of the Charleston. This week, however, with the temperature again above freezing, its tempo is considerably slower. Kansas lump is especially slow and is quoted 25c. lower by some operators. Others, however, maintain the standard midwinter price of \$5 a ton. Kansas nut is short and steam coal is easy.

The Arkansas market remains dull, but a better demand is expected late in January. The demand for screenings is good, but production is limited by the greatly reduced demand for lump, which has caused a cessation of work in many mines.

In Colorado the movement of domestic coal is not up to expectations; there is a large surplus of unbilled coal on track, particularly nut, which is not very encouraging. The slump is attributed, of course, to the mild weather, particularly in Kansas and Nebraska, which has prevailed for the last ten days. While the stocks in retailers' bins are getting low they are ordering only for immediate use. Apparently only severe weather will bring about a change. There has been no change in prices, there is a surplus of labor and transportation has been uninterrupted.

Utah operators find business very "spotty"; one week it is fairly good and the next things are quiet. Last week many of the mines averaged from four to five days working time as a result of a cold snap on the Pacific Coast and in the Northwest. This week the working time will be around half time. The domestic market is taking more domestic lump than anything else, and nearly everyone seems to be buying from hand to mouth. Industrials taking much coal at this time are comparatively few; the metal industries are consuming more than any others. Slack is easier again, but unless another cold snap comes in some part of the territory soon there will be a scarcity as a result of the short working time. Schedule prices are firm and there is little "cutting" outside of slack. Business in December was unusually quiet, that month being more open last year than for a long time, a big contrast to December, 1924, when the temperature stayed below zero for about two weeks. There is an abundance of labor.

Cincinnati Market on Firmer Ground

The Cincinnati market struck a much firmer footing during the past week than had been its lot for a month or more. There was no tremendous advance in prices, but the tone of solidity was marked. Colder weather was the prime cause, aided by the breaking off of negotiations between the anthracite operators and the unionists—which has been a cause of timidity in certain quarters.

The cold weather showed that retailers were not as well supplied with coal for immediate delivery as was imagined. This reduced accumulations in secondary reservoirs, between here and the west and between here and Detroit, which allowed new loads to move in. Smokeless felt immediate effect, with lump moving up to a \$4 basis. Demand from the East with prices around \$5 for stove and egg has caused shippers to keep only contractual tonnage moving West—most of this set around \$4.25. Mine-run stiffened to \$2.50, but screenings went lagging, some dipping down to \$1.50 and a range of \$1.75 on spot.

In the high-volatile lines there was a more even swing to demand, southeastern Kentucky tonnage again being held around \$3 and up to \$3.50 for the better grades. Egg was firm at \$2.25 for the best and \$2 for off grades with mine-run \$1.40@1.75. Slack and screenings ran 90c.@1.25. West Virginia was hampered a bit when a large-tonnage producer announced that the price on lump had been reduced from \$3 to \$2.50, but the most of the other concerns named \$2.75@3. With the exception of screenings the range was pretty much that of Kentucky, and on these the lowest price was around \$1.

Retail business profited by the cold snap, repeat orders coming in in healthy volume. River business was interfered with because of the cold, sleet and frost, few tows braving the weather.

Movement through the gateways of the Cincinnati district, as shown by the American Railway Association, showed interchange of 12,187 cars of coal, an increase of 3,026 compared to last week, and of 814 compared to the same week last year.

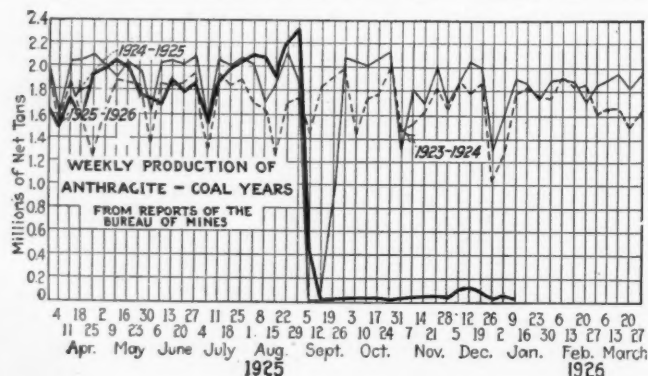
Owing to changeable weather the domestic trade at Columbus has been rather spotty during the last week, and prices at the mines remain unchanged. Retailers have normal stocks for the time of the year and are buying from hand to mouth. Householders are placing "second orders" and these are about half the size of the original orders. Smokeless and splints continue to be the favorite varieties and a good business is reported. A considerable tonnage of Kentucky block also is being sold. Retail prices are steady at former levels. There is practically no distress coal in domestic sizes on the market.

Dullness characterizes the steam business, utilities and steel plants being the best purchasers. Screenings broke considerably during the past week, especially those from the high-volatile fields. Prices were as low as 75c. a ton and high-grade screenings were sold at a sacrifice.

Output in the southern Ohio field is about 25 per cent of capacity. Some mines are in position to start operations should market conditions warrant.

Cold weather has done much to bolster up the eastern Ohio market, although prices have been soft on Ohio coals. West Virginia and eastern Kentucky coals for domestic use are strong, Pocahontas lump bringing \$4.25 f.o.b. mine in Cleveland. Retailers have been moving considerable coal during the week for heating purposes and buying has been more active in the steam trade, although not in sufficient volume to create any stir.

Output in the eastern Ohio No. 8 field during the week



ended Jan. 9 was 295,000 tons, or about 42 per cent of potential capacity. This was 78,000 tons over that of the preceding week—a five day week—but 12,000 tons under the corresponding week a year ago.

Hard to Move Output at Pittsburgh

Demand in the open market at Pittsburgh is hardly sufficient to support the rate of production, so that coal in general, apart from a few descriptions, is very hard to sell. Demand is slightly better for what is euphoniously called "nut" coal since the trouble two to three months ago with "egg" coal, which in many cases was too large. What is now called nut runs up to 2-in. and sometimes to 3-in. It has been bringing about \$2.50 for the eastern market. Slack is rather a drug on the market and prices have softened a trifle farther. Steam slack in the Pittsburgh district is \$1.30@1.40, with the lower figure predominating, while gas slack, recently quotable at \$1.50@1.60, is now not over \$1.50.

The straight bituminous trade at Buffalo is as flat as ever. A few members of the trade, wholesalers or operators, especially if they have some fair contracts, are doing fairly well, but the average shipper continues to complain. There still is some scarcity of slack, but prices remain about as before, with gas lump fairly strong.

Hard-Coal Impasse Spurs New England Trade

The breakdown in anthracite negotiations has already given the New England market for steam coal a slight impetus. Run-of-mine has not been much affected, but prices are firmer for screened sizes of all the grades considered likely substitutes. Smokeless egg and stove have mounted within a few days from \$4 to nearly \$6 per net ton at the mine, and several shippers are sold ahead to such an extent that they are declining business for the present. Most of the increased demand is due to a temporary shortage of substitutes in the larger centers of population; it can hardly be attributed to any special situation in this territory, although here too both the wholesale and retail trade practically ceased purchasing the latter part of December, when it seemed certain that an anthracite adjustment would be reached early in January.

For the same reason a better inquiry for imported fuel has developed. Remembering experiences in 1902, when certain factors netted serious losses on foreign coal that was purchased too late in the season, there is a disposition to insist on early loading or no purchase. More than a few of the larger retailers are without substitutes other than coke and run-of-mine bituminous, and now that they are beginning to hear from that portion of the public who take second fills at about this time they realize how strong is the preference for some form of anthracite. For ovoids, whether from Rotterdam, Swansea or Rouen, there is fairly active demand.

At Hampton Roads the spot price level is not specially changed from a week ago. There are more orders, and it is quite possible that the enhanced price of prepared may permit shippers to build up the price of mine-run. Thus far \$4.75@5 represents the market range for No. 1 coal, with occasional sales up to \$5.10. On cars, Boston, the \$6.50 asking figure is firmer. An active inquiry comes from small retail dealers in more remote places who have overstayed in the hope that anthracite mining would be resumed.

Demand Climbs in Atlantic Coast Markets

Demand and quotations for soft coal at New York reached the high point for nearly a year following the ending of the hard-coal wage negotiations. As soon as the announcement was made there was a flurry in demand and quotations for most grades advanced 10c. to 25c.

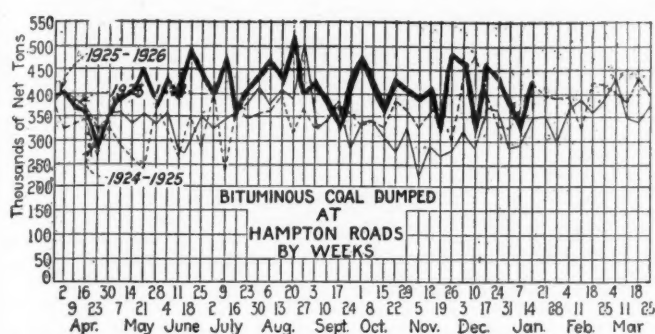
Low volatile mine-run coals are in most demand; a large tonnage going into apartment houses and office buildings. Screened coals apparently are not in favor.

Smokeless egg coal is quoted at \$5@5.25 and nut at \$5.25@5.50. Broad Top prepared coals are quoted at \$6.90@8.

There is a better demand for high-volatile domestic coals with prices ranging from \$2.75 to \$3.20.

It was expected late in the week that early this week a couple of cargoes of British and German coal and coke would arrive in this harbor.

At Philadelphia following the cessation of hard-coal wage negotiations there was a quick response in the soft-coal market. The coke market sold up so quickly that the anthra-



cite retailers fell back upon bituminous coal to help out. Houses handling sized Pennsylvania coals were soon sold up, with lumpy mine-run in next demand and close to being sold up at this time. There has been a gradually increased use of soft coal by the anthracite domestic trade, which is learning how to use it, and to like it.

Stirred by present conditions the general trade is coming into the market, causing a general increase in spot prices.

There has been a marked increase of New River and Pocahontas fuels to this territory recently and some houses are sold up for several weeks on the sized coals. Nut, which could be had for \$4.75 a few days ago, is now commanding \$6, with every likelihood that it will go higher. Demand for Fairmont sized gas coals also has gained rapidly and the same is true of the high-volatile Pennsylvania coals.

Following a sharp let-down of shipments to Baltimore territory and a shortage in the harbor during the holidays, the movement has regained full headway and prices show no distinct change from recent levels. Best grade steam coals are \$2@2.35 and there is no trouble in placing orders in almost any direction. Because of their use as a substitute for anthracite—and this use is increasing as the supplies of anthracite in cellars diminish—prepared sizes continue firm. Any real activity, as a matter of fact, is confined to these sizes. The effect of cheap European coal, especially German reparation coals released through France, is more and more apparent in the export trade. Thus far this month there has been but one shipment of coal to leave this port on foreign consignment, and that of 10,518 tons cargo to Cuba.

In Birmingham buying of commercial coal, while not specially active, is in satisfactory volume, inquiry and bookings improving some as the year advances and consumers' stocks dwindle. High quality washed coals continue most active, with a large tonnage of coking grades in demand from the ovens. Contract coal is moving well, the railroads taking about the maximum quotas. Bunker demand has eased off some, but inquiries continue to come in for extra requirements.

The weather has been more propitious for the domestic trade than last year and the mines have a steady run of orders, especially for high-grade product. Lower and medium grades, while not as active, are not sluggish, and there is no surplus of even the lower qualities. Dealers are buying in limited quantities and orders are for prompt movement.

Quotations for all grades are firm with prospects of buying being sufficient to maintain stability for some time.

The coke market has stiffened somewhat, with better inquiry and larger bookings for points in the Northwest following the advent of cooler weather. Prices have not shown any change in the last week, spot foundry grades being quoted \$6@6.50 per ton; egg, \$5.25; nut, \$4.75@\$5 per ton ovens. Gas coke is in slack demand at \$5.50@\$6.

Scramble for Hard-Coal Substitutes

At New York a lively spurt in substitutes, but chiefly affecting coke, followed the discontinuance of anthracite wage conferences last week. The announcement had scarcely been made before orders began to reach the wholesale offices and in some cases were received in such volume that further orders had to be refused if delivery time was limited.

Coke prices advanced from about \$10 for beehive product, f.o.b. ovens early in the week to \$13 on Thursday. The following day they had fallen back to \$12.50 with most manufacturers sold up for the present. This is an advance of from \$6 to \$7 in a few weeks.

Anthracite users are ready to put in their usual supply of coal to tide them through the first three months of the year and not now being able to get hard coal are compelled to resort to coke or some other substitute.

There are a few cargoes of buckwheat No. 1 in the harbor that are being quoted at around \$11.25 alongside. Some retail dealers have small tonnages of domestic coals on hand which in some instances are quoted at \$28.50 per ton. Early last week a cargo of byproduct coke which was afloat in the harbor was quoted at \$16.25.

When the wage conference broke up there was an immediate scramble in Philadelphia for all kinds of substitutes, but especially coke. Offers of coke which had been disdained in the morning at \$8.75 a ton, were eagerly grasped at \$1 and more higher late in the afternoon. The coke market continues to rise, \$12 at the oven having been reached on beehive fuel. The prediction is freely made that the price will touch \$15 in a week or ten days. Low temperature for several days has brought the public actively into the market for coal of any kind.

Baltimore's anthracite trade, that was, is merely biding time. Dealers, busy selling soft coal and other substitutes, realize that by the time the strike is settled much of the late winter market will have been absolutely lost.

At Buffalo the city house-coal consumer is fairly tranquil. He thinks that he has passed through the worst of it, or at least is on the way. He has tried most of the substitutes, smoked his house up with soft-coal lump and will have no more of it. He has used coke and likes it, though agreeing that it is too high and wants hard coal to come back, though if coke comes down he may stick to it. Coke is selling well and it at once became very scarce when the hard-coal peace conference broke up. There was some show of advancing the price, but as a rule it remains at \$12 delivered at the curb. Since the collapse of hard-coal peace negotiations the market for smokeless has been restricted in this market. Splints and Kentucky block will soon be sold in larger quantities as a result.

Connellsville Coke Stiffens Sharply

A week ago Connellsville coke had been showing some hardening tendency, run of oven being \$4.75@\$5 and prepared coke or "yard crushed," \$7@\$8. It continued to stiffen gradually and when news of the anthracite impasse came the market went up very sharply, being now quotable at \$7.50@\$8.50 for run of oven and \$10.50@\$11 for yard crushed.

The bulk of the prepared coke of the region is made by the installation of crushing rollers on top of Covington conveyors, which are the regular equipment for machine-drawn ovens. A little regularly crushed and sized coke is made, which commands still higher prices. It seems that the bulk of the coke from hand-drawn ovens is going out on blast-furnace contracts, and such hand-drawn coke as may be left can be broken by sledges. The region will be able to prepare nearly all the coke it makes, beyond that required to fill contracts with blast furnaces and foundries.

Blast-furnace requirements are no longer a factor in the market situation as the furnaces are covered by contracts, chiefly through the quarter. Contract requirements probably run between 60,000 and 70,000 tons a week and the limit of possibility of merchant-oven production probably is 140,000 tons weekly or thereabouts.

Foundry coke is quotable only on differential, as there are no offerings. This would make it about \$8.50@\$9.50.

The *Courier* reports coke production in the Connellsville and lower Connellsville region in the week ended Jan. 9 at 110,800 tons by the furnace ovens, a decrease of 3,800 tons, and 118,980 tons by the merchant ovens, an increase of 12,580 tons, making a total of 229,780 tons, an increase of 8,780 tons.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Jan. 2, 1926.....	741,239	158,944
Previous week.....	701,079	122,350
Week ended Jan. 3, 1925.....	767,098	181,604

	Surplus Cars		Car Chortage	
	All Cars	Coal Cars		
Dec. 31, 1925.....	267,739	95,295		
Dec. 22, 1925.....	186,285	63,509		
Dec. 31, 1924.....	266,252	108,189		

Foreign Market And Export News

Trade Picks Up Slowly Following Holiday Lull In British Coal Market

In the British coal market business has been slowly resumed since the holidays. Fresh inquiry from the Continent is very limited, but there is an expanding demand from South America. Moderate inquiry proceeds from Italy and Spain, though buyers are slow in concluding business, in the hope of obtaining concessions. A tendency to price reaction was stayed by the two-day holiday loss of output, amounting to 300,000 tons. Best Admiralty large is irregular. Dry coals are meeting very little demand owing to the lull in anthracite. In Monmouthshires block vein large is a good spot. Supplies are well sold forward and prices are holding strong. For spot loading smalls are steady. Patent fuel is quieter but unchanged. Coke is slow for export but a good business passes inland.

The January inquiry at Newcastle-on-Tyne is quite good for all grades, but business is not being closed very quickly. Sellers are holding for full recent prices, and the indications point to them being at least maintained. The coke market is very steady, and the home trade is much more active than for some time past. Prices are nominally unchanged.

Production by British mines during the week ended Jan. 2, according to a special cable to *Coal Age*, totaled 4,050,000 gross tons, compared with a total output of 3,965,000 tons in the preceding week.

Slight Change in Situation At Hampton Roads

Last week business at Hampton Roads showed little change from the previous week, except that shipping was flowing through easier channels following a stormy period and the bunker trade was improving. Foreign business has been normal and coastwise trade holding its own.

Continuance of the anthracite strike was expected to bring higher prices, but no effect has been felt. Domestic coal has not advanced as yet, although there are rumors that the anthracite situation will provide the impetus for a boost in soft coal.

French Demand Strong for All Grades; Prices Advance

Demand in the French coal market was on the increase during the whole month of December both for industrial and domestic coals. This was due to the desire of French consumers to cover as much as possible of their requirements before the increase in prices expected on Jan. 1. The justification for this policy was revealed when the Nord and Pas-de-Calais collieries decided to raise their prices as from Jan. 1, 5 to 6 fr. per ton and the price of ovoids 15 fr. per ton. Many collieries, however strictly limited themselves to the delivery of tonnages due on contracts. As rolling stock has been scarce the collieries were sometimes put to the necessity of heaping up tonnages at the pit-head that were impatiently awaited by customers.

The prices of the Belgian domestic coals sold to France are 3 to 5 fr. per ton higher for January, due to the lower value of the French franc as compared with the Belgian.

Negotiations between the French authorities and the Kohlensyndikat are still in abeyance. Resort to arbitration is now being spoken of.

Canal freight rates are high, at 30 fr. Bethune-Paris.

During the first 27 days of December, the O. R. C. A. received from the Ruhr 201,785 tons of reparation coke.

Belgian Industrial Call Better; Domestic Demand Eases

Industrial coals in the Belgian coal market show some improvement for half-bituminous, quarter bituminous, steam-raising coals, as well as for coals used by central electric works.

In domestic coals, except for anthracite sorts, activity has rather slackened; but this perhaps is due to an insufficient supply of rolling stock.

Briquets are rather weakly held, and so also are ovoids. The prices of both sorts of patent fuel are sustained, however, owing to the rise of pitch. When the present price of briquets, which varies from 95 to 105 fr., according to grade, was first quoted, the pitch was worth 240 fr. per ton, while it is now quoted at 330 fr. About 10 per cent of pitch is used in the manufacture of briquets.

A majority of the Belgian miners

have voted against a general strike and it is believed that the miners will accept the operators' proposals of a reduction of wages and continue pourparlers to draw up a new agreement.

Destination of U. S. Fuel Exports In November

(In Gross Tons)

	1924	1925
France.....	11,945	24,900
Italy.....	66,669	50,327
Canada.....	771,870	1,203,311
Panama.....	12,016	24,062
Mexico.....	4,505	7,312
British W. Indies.....	6,251	11,959
Cuba.....	50,794	59,758
French W. Indies.....	4,255	12,865
Other W. Indies.....	7,578	10,733
Argentina.....	35,656	11,431
Brazil.....	356	40,927
Egypt.....	7,933	19,438
Other countries.....		

Export Clearances, Week Ended Jan. 16, 1926

FROM HAMPTON ROADS

	Tons
For Cuba:	
Br. Str. Sunpath, for Cienfuegos....	2,608
Br. Str. Berwindmoor, for Havana....	9,803
For Danish West Indies:	
Br. Str. General Lukin, for Curacao....	4,425
Nor. Str. Lelf, for Curacao.....	2,505
For New Brunswick:	
Br. Schr. Cutty Sark, for St. John..	979
For Trinidad:	
Dan. Str. Agnete Maersk, for Port au Spain	2,925
For Brazil:	
Dutch Str. Rijndijk, for Santos.....	4,429
For French West Indies:	
Nor. Str. Bur. for Port de France....	6,212
For Dominican Republic:	
Nor. Str. Spes, for Macoris	1,529
For Italy:	
Ital. Str. Slara Camus, for Venice....	1,996
Ital. Str. Maria Adele, for Porto Ferrajo	9,241

FROM BALTIMORE

For Cuba:	
Am. Str. Feltore, for Felton.....	10,518

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Jan. 7	Jan. 14
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week....	138,780	162,647
Virginian Piers, Sewalls Pt.:		
Tons dumped for week....	49,212	83,512
C. & O. Piers, Newport News:		
Tons dumped for week....	115,366	140,948

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

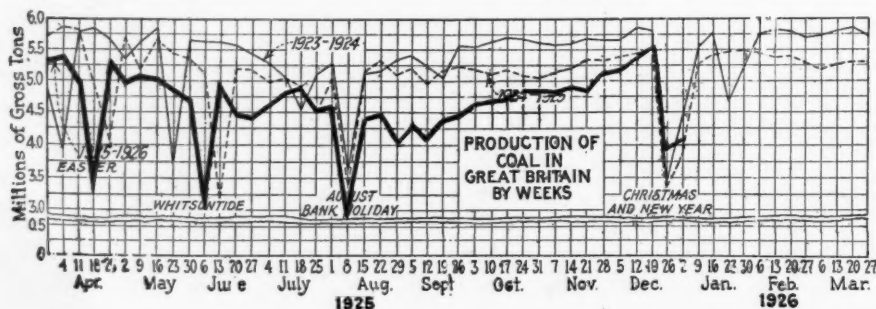
PIERS	
	Jan. 9
Pool 1, New York....	\$5.75@ \$6.00
Pool 9, New York....	5.20@ 5.35
Pool 10, New York....	4.90@ 5.20
Pool 11, New York....	4.65@ 4.80
Pool 9, Philadelphia..	5.05@ 5.30
Pool 10, Philadelphia..	4.80@ 5.10
Pool 11, Philadelphia..	4.50@ 4.75
Pool 1, Hamp. Roads..	4.60@ 4.75
Pool 2, Hamp. Roads..	4.20@ 4.30
Pools 5-6-7, Hamp. Rds.	4.00@ 4.10
BUNKERS	
Pool 1, New York....	\$6.00@ \$6.25
Pool 9, New York....	5.45@ 5.60
Pool 10, New York....	5.15@ 5.45
Pool 11, New York....	4.90@ 5.05
Pool 9, Philadelphia..	5.30@ 5.55
Pool 10, Philadelphia..	5.10@ 5.35
Pool 11, Philadelphia..	4.75@ 5.00
Pool 1, Hamp. Roads..	4.75
Pool 2, Hamp. Roads..	4.30
Pools 5-6-7, Hamp. Rds.	4.10

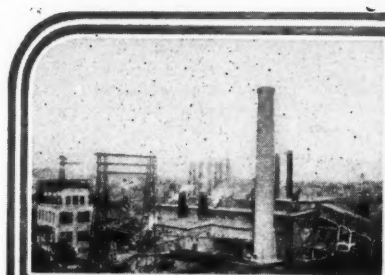
Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations by Cable to Coal Age

	Jan. 9	Jan. 16†
Cardiff:		
Admiralty, large....	23s.	22s.6d.@ 23s.
Steam smalls.....	14s.	14s.
Newcastle:		
Best steams.....	18s.	15s.9d.
Best gas.....	16s.6d.@ 17s.6d.	16s.6d.
Best bunkers.....	16s.@ 17s.6d.	15s.6d.@ 16s.6d.

†Advances over previous week shown in heavy type; declines in italics.





News Items From Field and Trade



ALABAMA

The new washery of the Black Diamond Coal Mining Co., at Adger, in the Blue Creek field, has been completed and placed in operation. This property was leased from the Tennessee Coal, Iron & Railroad Co., and the old Adger and Johns slopes, which had been idle for a number of years, are now producing a good daily output.

The Tennessee Coal Iron & Railroad Co., Birmingham, is about to begin construction of a \$100,000 recreation park at Fairfield.

ILLINOIS

The two Bell & Zoller mines, at Zeigler, broke their record for a day's movement of freight-car loads of coal on Dec. 28, when 882 cars were moved out of Zeigler. The Illinois Central handled 447 cars, the Burlington 296 and the Missouri Pacific 79.

The Kathleen mine, at Dowell, has purchased a crusher to salvage clear coal from the inferior rock coal which heretofore has gone to waste. Thousands of tons of this inferior fuel are now piled near the mine. The clear coal salvaged will be marketed. The mine is now working steadily.

With 3,600 acres of land in Schuyler County, lying east of Rushville, under six and twelve months' option, the United States Fuel Co., of Pittsburgh, Pa., through its representative at Rushville, has given promise that work will begin at an early date in opening up prospects for strip coal mining. The company maintains offices at Danville. The company's representative has stated that they believe Schuyler County to be a rich field for this development and it is the intention of the company to ship seven large steam shovels to Schuyler County as soon as they can be removed from other fields. It is also said that the Soo railroad is making plans to secure leases upon coal lands lying north and east of Rushville. Other companies will try to lease land north of Rushville, lying west of the Burlington tracks.

INDIANA

Preliminary articles of dissolution for the Paxton Coal Co., of Sullivan, were filed recently with Secretary of State of Indiana. Will H. Hays, formerly of Sullivan, but now "czar" of the moving picture industry, was secretary of the company; Joseph Hill, of Chicago, was president, and Joe Akin, Sullivan, treasurer.

IOWA

An investigation which it is hoped will result in a clear-cut definition of the causes for discrimination against Iowa coal by consumers and the taking of steps for their eradication, has been begun by Governor Hammill's agricultural and industrial commission. A subcommittee composed of F. L. Maytag, of Newton; A. M. Huntington, of Cedar Rapids, and Morgan Lewis, of Albia, has been appointed to conduct the investigation and report to the committee at a meeting Jan. 30 at Ames. Coal operators, mine union leaders and state college experts appeared before the subcommittee in the first hearing at Ames Jan. 16, when it was reported that heating plants installed in a number of large Iowa industrial concerns are of Eastern manufacture and not scientifically adapted to use Iowa bituminous coal.

KANSAS

Leland Norris, of the Dunkirk Coal Co., one of the best known members of the younger generation of operators in the Pittsburg district, has taken on another activity as a diversion. Andrew Mitchell, one of his mine employees, having shown notable skill as a boxer, Mr. Norris has become his "Jack Kearns" and expects to promote him into fast company if he maintains the stride he has so far struck. Before becoming an operator in his own right Mr. Norris was for several years a field scout for the Crowe Coal Co.

The coal mine three miles south of LaCygne, in Linn County, in what is known as the Pleasanton field, which was formerly owned and operated by the Kansas Coal Co., has been purchased by interests headed by A. R. Rush, LaCygne banker, and operation resumed. The mine had been idle for more than a year.

Only one-fifth of the Kansas operators had made their report for the last quarter of 1925 to James Sherwood, state mine inspector, on Jan. 11 and he prepared to take steps to speed them up so he can compile the department's annual report.

The Western Coal & Mining Co. with its six Kansas mines had a total output larger than for the preceding year and smashed two production records. Its total output for 1925 was 902,347 tons, compared with 877,514 in 1924. It employed only 1,041 men in 1925 compared with 1,321 in the previous year. Developments now under way will add 400 to the number of employees for 1926. At mine No. 20 on June 30 the Kansas daily hoisting record was

broken when 1,558 tons were brought to the top. This mine produced 304,210 tons of coal in 1925, which is more than ever before obtained from one Kansas mine in a year.

J. F. Klaner, Pittsburg coal operator, will leave Jan. 16 for Alaska to look after his fox ranch, which occupies an island of 14,000 acres.

Emile Turpin, operator of a coal mine near Scammon, and Miss Margaret Cassidy, also of Scammon, were married Dec. 12, but kept the event a secret until Jan. 11 and then made announcement of it.

The Bunker Hill Coal Co., capital stock \$10,000, has been incorporated by W. W. Garrett, Arma, president; Joe Schaub, Arcadia, secretary and treasurer; Charles Harbort, Mulberry, and Frank Harris, Arcadia. The company plans to operate a steam shovel near Arcadia.

The Diamond Coal Co., capitalization \$10,000, is to operate a steam shovel near Pittsburg. The incorporators are H. J. Feiden, president; R. D. Wilson, secretary and treasurer; William and Hilton Whetstone and J. R. Bennett, directors.

The executive board of District 14, United Mine Workers, has set Feb. 2 as the date for the run-off election on whether to retain headquarters in Pittsburg or move to Arma or Frontenac, both of which had offered inducements of a building to be used by the organization offices. Frontenac led in the election Dec. 29 but fell 393 votes short of a majority of all the ballots cast.

KENTUCKY

The Main Jellico Mountain Coal Co., of Williamsburg, is decreasing its capital from \$500,000 to \$50,000.

Louis A. Powell, manager at Louisville for the Malcolmson coal interests, is one of the incorporators of the new Crescent Hill Golf Club, which has arranged for a nine-hole course on property of the Louisville Water Co.

The Speaks Coal Co., Whitesburg, is making extensions to its plant and is installing new machinery.

The "Robert G. Ingersoll," one of the largest coal tow boats on the Ohio River has been equipped with a radio receiving set for use in receiving weather and radio reports of river stages, which are now broadcast from the Crosley W. L. W. station at Cincinnati. Heretofore it was necessary for river captains to land and get such information by telephone. With a

rapidly changing stage of water such information is very necessary.

Since the Kentucky Legislature started operations, on Jan. 6, Governor Fields has advocated certain tax changes, but some newspapers charge him with sidestepping a tonnage tax on coal, especially the *Courier Journal* and *Louisville Times*, which have been arguing for a coal tonnage tax for years. The *Herald* and *Post* are upholding the Governor, holding that a tonnage tax in Kentucky, which ships most of her coal into districts competing with untaxed coal, would work a hardship on the entire coal industry of the state.

Harry A. Brooking, mine agent and Southern sales manager for the King-Kentonia Coal Co., with headquarters at Harlan, has been retained in the taking over of the Kentonia's business by the Midland Coal Sales Co.

The New Duane Coal Co., on Lots Creek in the Hazard field, has been bought by C. L. Ryly, Lexington, who owns several mines in eastern Kentucky, including the Happy Coal Co., at Carr's Fork, and the No. Four Superior, at Lennut Lots Creek. The consideration was not made known. It also was reported that the Black Hawk Coal Co. at Carr's Fork had been sold. For some time these mines have been operated under a receivership, the Louisville Trust Co. having been named receiver.

The annual banquet of the Hazard Coal Operators' Exchange is to be held in Lexington, Feb. 24.

"Safety First" was the slogan at the recent organization of the Kentucky River Mining Institute at Hazard by 150 leading coal operators and those closely identified with the industry throughout the Elkhorn-Hazard field. Officers named were: President, George P. Fitz, of the Ajax Coal Co., Lott's Creek; vice-presidents, D. T. Mitchell, of the Ashless Coal Co., Lothair, and Henry Pfenning, of the Southeast Coal Co., Seco; treasurer, Richard Samuels, Jr., of the Imperial Elkhorn, Sergeant. A secretary is to be appointed later. J. E. Johnson, president of the Hazard Coal Operators' Exchange, Lexington, presided over the meeting. Regular meetings will be held each month and will rotate from Hazard to Whitesburg.

NEW YORK

Grant B. McLaughlin, well-known Buffalo coal salesman, has been made a vice-president and general manager of the Factory Fuels Corp., which takes the place of Wesley P. Montgomery & Co. Mr. Montgomery has become resident manager of the North American Coal Corp., a consolidation of several Cleveland companies.

OHIO

The Redfield Coal Co., with an operation near Redfield, it is announced will resume operations following a lengthy suspension owing to lack of demand. The Redfield mine of the Harmeyford Coal Co. also is being prepared for operation in the near future.

The Columbus Ry., Light & Power

Co. will furnish power to the Scioto Traction Co., under a contract just signed. The Scioto Valley power plant at Rees, south of Columbus will be closed. The Scioto company will build a switch from its line to the immense power plant located on Walnut Creek, Groveport. This switch together with the line running to the large power plant on the Scioto River, south of Columbus, under construction by the Columbus Ry., Light & Power Co., will connect the two large power plants of the company and permit of the transfer of coal from one plant to the other by the traction line. This will mean that the coal for the two plants, amounting to several hundreds of thousand tons yearly, will come to Columbus over the C. & O. and the Hocking Valley railroads. The N. & W. will be cut out of this large tonnage. The agreement will take effect as soon as the necessary lines can be built.

A notice has been issued for a meeting of stockholders of the Peerless Elkhorn Coal Co., at the office of the company, 150 East Broad St., Columbus, for the purpose of dissolving the corporation. This company, which was a subsidiary of Hatton, Brown & Co., Inc., has been absorbed by that concern and will pass out of existence. The concern controlled several mines in Kentucky. F. G. Hatton is president and George F. Schwartz secretary of the company.

The George M. Jones Co., of Toledo, owner of Webb Mine near Steubenville, which was closed following a fire in which nine miners lost their lives, has resumed operations. The fire was extinguished by the Ohio mining department.

An effort is being made by creditors and former members of the Southern Ohio Coal Exchange, which went into the hands of W. W. Metcalf as receiver more than a year ago, to compromise the claims and settle up the receivership. Suits to collect about \$14,000 have been brought against the individual operators and operating companies to collect claims, on the assumption that since the exchange was not incorporated the liabilities are individual. Other claims to the amount of \$37,000 have been made but no suits filed. There are about \$10,000 in dues to be collected. In the meantime W. D. McKinney, secretary and manager of the exchange, is functioning in a way, collecting data on operations in the southern Ohio field and serving the operators in other ways.

Walter A. Jones, one of the ancillary receivers of the Wayne Coal Co., of Pittsburgh, denies the report that the offices of the company will be removed from Pittsburgh to Columbus. While that matter had been considered, no action was taken and for the time being at least, the offices in Pittsburgh will be maintained. The company has 16 stripping operations distributed in various Ohio fields, the largest number being in eastern Ohio. A large operation is located at New Lexington. All of the operations are being worked and no change in the policy of the company has been made under the receivers. Fred E. Butcher, a mining engineer of Danville, Ill., is a receiver with Mr. Jones.

More than 250 miners of the Paisley Coal Co. at Oca notified company officials, Jan. 14, that they would go on strike unless paid in cash instead of by check. The company adopted the check-paying system because of the risk of hold-ups. Officials said the system would be continued or the mine would be shut down. The miners assert that they lose a day's work going to nearby cities to have the checks cashed. A half dozen other companies, employing about 1,000 men, have served notice that hereafter the miners will be paid by check. The miners have called upon the United Mine Workers' district organization to protest.

The Indian Run Coal Co., of Charleston, W. Va., has opened a branch sales office in Cincinnati in the First National Bank Building, with James C. Layne, Jr., in charge. Mr. Layne formerly was manager of the coal department of Eaton Rhodes & Co. Later he opened his own office to market Man o' War Fuels, which business he will take along with him to his new position.

Coal companies and wholesalers of Cincinnati, Kentucky and West Virginia are again prominently represented on the Cincinnati Chamber of Commerce with the re-election of George Kearns of the Kearns Coal Co. as secretary for another term.

The annual meeting and banquet of the Cincinnati Coal Exchange will be held at the Business Men's Club Feb. 2. At a meeting of the directors the following committee appointments were made: Employment, E. C. Harper (chairman), W. I. Donnelly, E. Fitzgerald and John Emslie; Entertainment, J. B. Ratterman (chairman), R. A. Dickson, Elmer Weirhake and Dan Pritchard; Membership, John F. Glaser (chairman), Fred Heitzman, John A. Emslie, Ernie Howe and Fred Legg; Publicity, R. A. Colter (chairman), Joe Tuohy, James A. Reilly and R. P. Gillham; Trade Rules, C. R. Moriarity (chairman), D. E. Elland, Thomas R. Morgan, T. H. Richardson and W. P. Slaughter; Transportation, W. J. Magee (chairman), John Callahan, T. T. Wright, John Metcalf and Ernie Howe.

C. A. Cabell has been elected president of the Carbon Fuel Co., succeeding John Thomas, who died last December. Mr. Cabell resides in Charleston and divides his time between there and Carbon, W. Va. At present he is sojourning in Florida. W. J. Magee, vice-president in charge of sales, recently returned from a hunting trip in northern Mississippi.

PENNSYLVANIA

The Oliver & Snyder Steel Co. has officially announced some changes in the operating personnel of the Oliver coal and coke plants in Fayette County, the changes already having been made effective. John H. Lane now is general superintendent in complete charge of Oliver Nos. 1, 2 and 3 mines and coke works at Oliver, Redstone Junction and Thaw. Charles H. Hinsey is chief mining engineer and assistant general superintendent of Oliver Nos. 1, 2 and



Mining Town of Slab Fork, West Virginia

This picture, showing the well-kept homes of the miners employed by the Slab Fork Coal Co., and the company building at the left, was taken from the Virginian Ry. bridge. The Virginian serves this territory.

3 mines. J. F. Delehunt is superintendent of No. 3 mine and coke works. Clyde G. Brehm is chief electrician and assistant to the general superintendent. Thomas W. Keighley is superintendent of the Nos. 1 and 2 mines and coke works.

J. F. Joy, formerly president of the Joy Machine Co., manufacturer of the Joy loading machine, has gone to Russia as an efficiency engineer for the Russian Soviet Government. He expects to remain for several years. Mr. Joy's home was in Pittsburgh for some years.

P. J. Walsh, until recently general superintendent of the Consolidated Coke Co., is now general superintendent of the G. Corrado coal interests with headquarters at Connellsville.

C. E. Cowan, of Greensburg, chief engineer of the Jamison Coal & Coke Co. and consulting engineer of the Lincoln Gas Co., has been appointed consulting engineer for the Snowdon Coke Co. also.

The Weirton Steel Co., as part of its \$15,000,000 improvement program at the plant at Weirton, W. Va., has awarded a \$2,250,000 contract to the Koppers Co., of Pittsburgh, for the construction of a battery of 49 byproduct coke ovens. These ovens, added to the battery of 37 now in use at the plant, will give the steel company a total of 86 ovens. Construction of the new battery, which will be of the Becker type, will start immediately and be completed in about eight months. When the full 86 ovens are in operation the company will produce approximately 1,700 tons of furnace coke per day from 2,500 tons of coal. The new battery of ovens will include apparatus for the recovery of byproducts.

Negotiations have been concluded whereby Guy Corrado, Connellsville coal operator, takes over 1,200 shares of stock in the Indian Creek Valley Ry. held by the estate of the late Charles F. Hood of Connellsville. The balance of the 1,400 shares is owned by the Baltimore & Ohio R.R. The railroad, which consists of 21 miles of main trackage, connecting with the Balti-

more & Ohio at Indian Creek, terminating at Jones Mills, taps a coal field of more than 50,000 acres of Somerset coal with 18 working mines and maximum daily tonnage of 885 cars.

John Crawford, of Pt. Marion, has resigned as superintendent of the Poland mines of the Poland Coal Co., of Pittsburgh. His successor has not yet been appointed.

S. C. Reynolds of Houston, Pa., made an address on modern mining methods at the quarterly meeting of the Pittsburgh Coal Mining Institute Jan. 16, in the auditorium of the Chamber of Commerce. Other addresses on mining problems were given. A question box, conducted by W. L. McCoy, was a feature.

UTAH

H. H. Calvin, for several years general sales manager and later special agent for the United States Fuel Co., Salt Lake City, and son of Vice-President Calvin of the Union Pacific R.R., is now head of a stationery and office supply company in Los Angeles.

VIRGINIA

December coal production in Virginia reached the highest point so far attained in the history of the field. Output for the calendar year will approximate 12,500,000 tons, which is about 1,000,000 tons more than was produced in any previous year.

WEST VIRGINIA

The Bethlehem Mines Corp. held a safety meeting in Barrackville Jan. 14, when William McCoy, of Pittsburgh, Pa., chief inspector of the Bertha Consumers Co., spoke on safety. The films "Play Safe," "An American in the Making" and "Our National Parks" were shown.

A school of instruction of the Clarksburg District Mining Institute began to study the West Virginia state mining laws at its session Jan. 12 in the Trac-

tion Building, Clarksburg, under the direction of Charles Bashere, general superintendent of the Cambria Coal Co. The class will continue its study of the mining laws at future sessions of the class.

J. W. McCarthy, who was arrested in Pasadena, Cal., on Jan. 8 after forfeiting his bond in the federal court for the southern district of West Virginia on a charge of using the mails to defraud, has been indicted by the Kanawha County Grand Jury on a charge of obtaining by fraud nine cars of coal from the Coal State Coal Co. The mail fraud transactions charged against McCarthy had to do with his activities as a coal broker.

The sixteenth annual banquet given to its employees by the United States Coal & Coke Co. was held at Gary Jan. 16 with 235 present. Officials expressed gratification over the excellent record made at the company's mines in 1925, when 6,262,884 tons of coal was produced with only 15 fatalities. Mine No. 6 has produced over five million tons since the last man was killed. The Gary operations had an output of 1,500,000 tons per fatality and Lynch produced 1,400,000 tons for each death in the last six months.

A series of changes in the state mining districts of West Virginia went into effect Jan. 15. District No. 6 constitutes a new district, extending from Dakota to Morgantown, with Thomas Jarrett, of Weston, in charge. C. D. M. Kramer, of Clarksburg, goes to Weston. William Moore, of Morgantown, has been transferred to District No. 25, composed of parts of Boone, Kanawha and Logan counties, and V. E. Sullivan of Charleston, goes to Morgantown. W. B. Riggelman remains in the Fairmont district. The Clarksburg district has been renumbered and will be known in the future as No. 4 instead of No. 3. Other new assignments are as follows: First, C. W. Stuart, inspector, Thomas; Second, W. H. Sandridge, inspector, Grafton; Fourth, Evan L. Griffiths, inspector, Clarksburg; Seventh, V. E. Sullivan, inspector, Morgantown; Eighth, A. E. Lafferty, inspector, Moundsville.

The Blue Ridge Coal Corp., of Charleston, has been granted permission to increase its capital stock from \$200,000 to \$300,000 and similar permission has been granted to the Export Coal Co., of Charleston, for an increase in capital stock from \$150,000 to \$250,000.

CANADA

Sir Henry Thornton, president of the Canadian National Rys., has advised Premier E. N. Rhodes of Nova Scotia that the railway would take approximately 120,000 tons of banked coal in an endeavor to relieve the unemployment situation in the Cape Breton mining district. He stated that the usual requirements of the systems were from 500,000 to 700,000 tons of coal and though it was distinctly against the company's interests it was prepared to take 20 per cent of this amount in banked coal if it would relieve the distress.

Premier Brownlee, of Alberta, held

a conference Jan. 7 with Premier Ferguson of Ontario respecting the bringing in of coal from the Alberta mines. He was assured by Mr. Ferguson that as soon as the Alberta government was able to obtain from the federal government a special reference of Alberta coal rates to the Dominion Railway Commission the Ontario government would co-operate with Alberta in a joint representation of the case. During his visit to Toronto Premier Brownlee held several conferences with representatives of public bodies and commercial organizations and found them all desirous of obtaining coal from Alberta provided special freight rates could be obtained.

Traffic

Ohio-Inner Crescent Rates to Indiana Not Unreasonable

Examiner Burton Fuller of the Interstate Commerce Commission has recommended dismissal of Docket 16138, Indiana State Chamber of Commerce vs. Ann Arbor R.R. et al. The complainants alleged that the rates on bituminous coal to all points in Indiana from coal mining districts in Ohio and from the Inner Crescent region were unreasonable and unduly prejudicial to complainant's members and localities and the traffic thereto and unduly preferential of their competitors.

The examiner, after a lengthy recital of the evidence submitted, is of the opinion that the freight rates on coal complained of are not responsible for the depressed condition of the mining industry in Indiana and recommends that the commission should find that the rates assailed are not unreasonable or unduly prejudicial, and the complaint should be dismissed.

Penna. P. S. C. Asks to Intervene in Lake Cargo Rate Case

The Pennsylvania Public Service Commission announced on Jan. 9 that it had petitioned the Interstate Commerce Commission for the right to intervene in the lake cargo coal rate case. Intervention is sought in the case of the Pittsburgh Coal Producers' Association and others against the Ashland Coal & Iron Co. and others.

The Pennsylvania Commission asks that the case be reopened for re-argument and reconsideration. The petition sets forth that the rates allowed on bituminous coal shipments from Pittsburgh to the lake ports are unjust, unreasonable and unduly discriminatory, unduly and unreasonably preferential and prejudicial and in violation of the Interstate Commerce law. Twenty-nine of the facts used in the I.C.C. report are picked out for consideration by the petitioner as the basis for its appeal.

Rates on coal from points in Illinois to points in Nebraska and Kansas are alleged to be unreasonable in a complaint filed Jan. 11, with the Interstate Commerce Commission in the case of the Illinois Coal Traffic Association, of Chicago, vs. the Arkansas Valley Inter-urban Railroad Co.

Industrial Notes

E. M. Staehle, formerly in charge of industrial advertising for the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has resigned to become eastern representative of the Keystone Mining Catalogs. Mr. Staehle, who succeeds Edward B. Day, will have his headquarters at the offices of the McGraw-Hill Co., Tenth Ave. at Thirty-Sixth St., New York, which recently acquired the Keystone catalogs and directories.

C. V. Root recently joined the Electric Service Supplies Co., Chicago. He is to cover the Chicago territory in the interests of floodlighting. **G. R. Scott** will cover the states of Minnesota, North and South Dakota, Iowa and eastern Nebraska. **Chas. J. Brickley** will cover the State of Wisconsin and upper Michigan. **L. S. Belding** will cover Ohio and part of Michigan. **J. F. Carper** has joined the Steam Railroad Department of the company.

The Simplex Wire & Cable Co., of Boston, Mass., has opened a branch office in the Union Trust Building, Euclid Ave. at East Ninth St., Cleveland, Ohio. **Wm. H. Lamond** will be manager of the new office.

The Aldrich Pump Co. of Allentown, Pa., has purchased the entire line of centrifugal pumps manufactured by the **Earl Gear & Machine Co.** of Philadelphia, Pa., adding it to the Aldrich line of reciprocating power pumps.

Obituary

Frederick Parker Wright, general manager of the Crescent Coal Co., of Bevier and Nashville, who was 75 years of age, died at Bevier, Ky., Jan. 10. Born in Massachusetts, he was taken to Chile in his childhood, staying there until the Civil War, when he returned to the United States and later served as an officer in the Union Army. His early work included a part in the building of the New York water works system and coast defenses on Long Island. He was vice-president of the West Kentucky Coal Operators Association and the West Kentucky Coal Bureau. He is survived by his wife, Mrs. Lillian Massey Wright, and one son, Douglas M. Wright, the latter of Nashville.

James Duncan, 65, moving spirit and for the last four years active head of the Mt. Olive & Staunton Coal Co., St. Louis, which is controlled by New York capital, died in New York City Jan. 9. He also was president of the Alton & Eastern R.R., Litchfield & Madison R.R., Duncan Foundry & Machine Works and the Illinois Stoker Co., as well as a director in many other railroad, manufacturing, mining, oil and banking corporations and he was interested in many concerns both in Illinois and in Oklahoma.

Charles Bailey Odle, 75, the oldest coal salesman in the St. Louis territory, died at his home in St. Louis, Mo., Jan. 9. He had been selling coal for 43 years and his territory extended all the way from Texas, Louisiana and Mississippi to the Canadian border, having traveled the South when Illinois coal was his principal fuel. For the past twenty years he had been associated with the Southern Coal, Coke & Mining Co. and was active in calling on his trade in Illinois and Missouri until four weeks ago, when he became ill. He formerly was associated with the Consolidated Coal Co. of St. Louis for many years.

Delavan C. Shoemaker, 43, president of the Shoemaker Coal Co., Chicago, died in that city Jan. 6. After leaving high school he spent two years in railroading and three years in the steel industry, taking up traffic work in 1908 with the City Fuel Co., which later became the Consumers Co., remaining with that company until 1920, when he became vice-president of the Republic Coal & Coke Co. Shortly thereafter he organized the D. C. Shoemaker Coal Co., of which he remained president until his death. He was one of the organizers and was first president of the Chicago Wholesale Coal Shippers' Association.

Alexander Reid, Jr., 41 years old, one of the principal owners of the R. & C. Coal Co., of Mineral, Kan., died in Pittsburgh hospital the night of Jan. 9, after four transfusions of blood, supplied by relatives, failed to stem the ebbing tide of life following an operation several days earlier. A brother, John Reid, furnished a quart of blood for the last transfusion that was

made. Mr. Reid was engaged in the coal industry in Cherokee County from his youth.

John Lindblom, 58 years old, one of the owners of the Purity Coal Co., Des Moines, died Jan. 10 at his home in that city, following a stroke of apoplexy. He was born in Sweden, came to America in 1886 and settled in Des Moines in 1890. He became interested in the Maple Block High Bridge mines with A. W. Carlson. He also was a partner with Oscar L. Olson in the Purity Coal Co. He is survived by his wife.

Association Activities

The annual meeting of the **Indiana Coal Producers Association** was held in Indianapolis Jan. 12, in the offices of the Patoka Coal Co., Michael Scollard, the association secretary, reported that the past year was the most successful in its history. All branches of its work have been maintained in a condition of healthy activity. The personnel of the officers remains unchanged: **Fred S. McConnell**, president; **Hugh B. Lee**, vice-president; **Michael Scollard**, secretary; **R. H. Sherwood**, **J. T. Moorman** and **Wick Dixon**, executive board. The organization's office is at Terre Haute.

New Companies

The Sandlick Coal Co. with a capital of \$140,000 has been incorporated at Whitesburg, Ky., by **P. F. Gorman** and **James P. Lewis**.

The Brown Coal Co., Pittsburg, Kan., has been incorporated by **Louis M. Brown**, **Homer Brown**, **I. N. Brown**, **Miss Mabel Brown** and **Mrs. L. A. Kooney**, all of Pittsburg, to operate a deep mine near that city. The capitalization is not announced.

The Wilson Noland Coal Co., Russellville, Ark., with a capital of \$15,000, has been incorporated by **Albert L. Wilson**, president; **J. L. Noldan**, vice-president, and **Rexce A. Caudle**, secretary-treasurer.

The Trio Coal Co. has been incorporated in Madisonville, Ky., with a capital of \$30,000, by **E. B. Hamblett**, **Tom Logan** and others, and has acquired the property of the **Finley Coal Co.**, the daily output of which will be increased from six to twenty-five cars.

The Morrisonbo Coal Co., Madisonville, Ky., has been incorporated by **J. N. Stinehour**, **W. T. Spilman** and **G. C. Beckwith**.

Coming Meetings

Hazard Coal Operators' Exchange. Annual meeting Jan. 22, at Lexington, Ky. Secretary, **J. E. Johnson**, Lexington, Ky.

American Wood Preservers' Association. Annual meeting, Jan. 26-28, 1926, at Cleveland, Ohio. Secretary, **E. J. Stocking**, Chicago, Ill.

Midwest Power Conference Jan. 26-29, at Furniture Club of America Rooms, 666 Lake Shore Drive, Chicago, Ill. Secretary, **G. E. Pfisterer**, 53 West Jackson Boulevard, Chicago, Ill.

Coal Club of Philadelphia. Annual meeting, Jan. 28, 1926, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, **C. K. Scull**, Philadelphia, Pa.

Northeast Kentucky Coal Association. Annual meeting, Jan. 28, 1926, at Ventura Hotel, Ashland, Ky. Secretary, **C. J. Neekamp**, Ashland, Ky.

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, **F. L. Hutchinson**, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, **Dr. H. Foster Bain**, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, **Benedict Shubart**, Boston Building, Denver, Colo.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass., April 7 and 8. Secretary, **E. I. Clark**, 141 Milk St., Boston, Mass.